The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIII, No. 19 CHICAGO, ILLINOIS NOVEMBER 7, 1914

THE EDUCATION OF HEALTH OFFICERS *

MAZYCK P. RAVENEL, M.D.

Professor of Medical Bacteriology and Preventive Medicine, University of Missouri School of Medicine; Director Public Health Laboratory

COLUMBIA, MO.

In looking over the field of preventive medicine and its future effect on this country the most striking necessity which confronts the observer is that of having trained leaders—not a few great men here and there, but leaders in cities and small communities throughout the land—men who through special training are capable of directing the formulation of health laws and of educating the public for their enforcement.

The day when the training which is given in the ordinary medical school leading to the degree of M.D. was held to qualify a man for the administration of public-health matters has passed. The field of medicine has become so broad that specialism is a necessity. In spite of this the average physician is regarded by the public as a competent authority on public-health matters, but this state of affairs is rapidly changing. It is defended by no one except those ignorant of the real necessities of the case. The magnificent work in preventive medicine which has been done by our Public Health Service and our army and navy medical services has excited the admiration and the attention of everyone, and throughout the land people are beginning to demand better-trained men as officers in the fight against disease. Ignorant and supine health officers can never excite enthusiasm in the rank and file. People demand leaders who know more than they themselves do. Our public is becoming rapidly educated, and every increase in knowledge fits it for further instruction.

Unfortunately, many of the old ideas concerning disease die hard. The public still feels, even if it does not believe, that there is something occult and supernatural about disease. There is a great reaching out after the unknown and the miraculous. Consequently, the mass of people, while ready and anxious for knowledge concerning the laws of health, absorb misinformation more readily perhaps than the truth. This is proved by the prosperity of advertising quacks and patent-medicine venders everywhere, which still persists in spite of the splendid work which has been led by THE JOURNAL of the American Medical Association, and followed by a limited number of enlightened editors elsewhere.

I feel that our medical schools, which should lead in such matters, have been slow to recognize the necessities of the situation. At present in this entire country the schools which educate men with particular reference to their duties as health officers can be counted on the fingers of one hand. It may be said with truth that owing to the multiplicity of medical schools they have had a hard time to make both ends meet, and have been unable to offer courses which would be taken by but a few men at best, and for which there has been no general demand among the members of the profession. Why has there been so little demand for such training?

This question brings us at once face to face with a condition of things existing throughout this country in regard to boards of health and health officers—a condition which has been in the past and is at present the greatest stumbling block to progress, and offers enormous difficulties which may well discourage all but the most optimistic. I refer to the domination of politics over health matters. The appointments of men to positions as health officers on merit are few and far between. States, cities, villages, and towns have their boards of health, the members of which are usually given their positions by appointment. The boards of health, or in some cases the city councils, elect the health officer. No special training is required. The man who can pull the greatest influence usually gets the position regardless of fitness. With changes constantly taking place in our city councils and boards of health, owing to our system of frequent elections, there is no certain tenure of office. The man who becomes health officer in a vast majority of cases knows that his term is to be a short one.

In addition to this there is no general feeling in this country that the prevention of disease puts dollars and cents into the treasury of a community and is a good commercial proposition. Consequently, with the exception of our large cities there is no adequate payment of men engaged in public-health work. The position of health officer is taken on as a side issue, too often only for the supposed glory it carries and the advantage it gives the practitioner in his private work. These facts are well known, but what is the outlook for their correction? I confess that the only hope I can see in the matter is a wide-spread educational campaign, which is always a slow process. Here and there encouraging signs are observed—several smaller communities banding together and appointing a whole time health officer, as has been done in the neighborhood of Chicago within the last year, though private philanthropy was the motive power.

What incentive is there for a man to give up one or two years after graduation in medicine to the further

* Chairman's address, read before the Section on Preventive Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, June, 1914.

study of public health with its attendant expense when he might be building up a practice?

While the demand for trained health officers is increasing year by year, it is confined at the present time to large and medium-sized cities. The outlook for the small communities throughout our land, of which there are many, is decidedly bad. Each year our Public Health Service is calling for such men in greater numbers, some of them are employed by commercial firms, and some drift into public service here and there, but I have not been able myself to recognize any great demand for well-trained men in this line of work, and still less at salaries which are commensurate with the expense of education.

The matter of adequate salary is one of far-reaching importance. Not only does a good salary act as an incentive toward inducing capable men to spend money on education, but it enables a health officer to give his entire time to the work in hand. I can not lay too much emphasis on this point. The whole-time health officer is a necessity. "No man can serve two masters." When the salary is small the health officer is compelled to take up practice or other lines of work in order to support himself and his family, and it is only human nature for one to give attention to the development of the work for which a fixed salary is not paid. Except by combination, whole-time health officers for small communities seem difficult to obtain, but cities and states can well afford to pay good salaries and should require health officials to devote their time to the duties of their office. The position of health officer is a man's job, and if properly attended to requires undivided attention, and all the time one can give to it.

The question has been raised as to how much prevention of disease the medical profession will stand for. Within the last year I have heard it said several times that the rank and file of the profession could not be expected to do much more, or to stand much more, in the attempt to prevent disease. I have also heard it said a number of times that medical practice had been already injured as a business by the prevention of epidemic diseases. I have always felt and still feel that the medical profession will stand, as in the past it always has, for the best interests of the public as a whole, and that it can be counted on to foster any movement for the preservation of health. I can not bring myself to believe that the lack of interest shown in the study of preventive medicine is due to the reasons stated. If, however, there is any truth in the statements which have been made, it behooves the authorities of our medical schools not only to exercise a more strict supervision over the character of the men who are admitted as medical students and to whom diplomas are issued, but also during the course of study they must see to it that the idea of prevention is thoroughly inculcated so that it becomes in the mind of the medical man a habit of thought. The whole subject should be presented in the most attractive way possible, and the opportunities which such a career offers should constantly be set before the students.

The number of problems which every health officer must face is very great, and to reach the greatest efficiency he must have a wide range of knowledge and be a man of many parts. The prevention of contagious disease is believed to be the chief duty of a health officer by the public and unquestionably this is one of his greatest functions, but in the carrying out of this work many things are necessary which do not appear on the surface. One great task demanded of the health officer is the obtaining of proper appropriations to carry on health work. This requires not only thorough knowledge of every scientific fact involved, combined with ability to present the practical side quickly and succinctly to laymen, but demands also a vast amount of tact and patience. Since the health officer has the direction of work covering such a wide field, and in smaller communities must personally attend to it, it is necessary for him to have the training indicated in the following outline:

A good general education, including chemistry, physics, biology, and other natural sciences; bacteriology, general, medical, and as it applies to dairying and other commercial processes; infection and immunity; modes of transmission of disease; the rôle of insects; protozoology; the principles of veterinary medicine with especial attention to the diseases of animals which are transmissible to man; animal parasitology; pathology; physiology; diagnosis, especially as it applies to the eruptive and contagious diseases; examination of water-supplies, including sources, purification, storage, etc.; the analysis of sewage, its treatment and disposal; disinfectants; food and drug analysis, adulterations, etc.; engineering, including the principles of hydraulics, drainage, plumbing, heating, ventilation, lighting, etc.; rural sanitation; occupational diseases and injuries; the principles of climatology; applied hygiene, which includes actual work in public-health laboratories, the routine examination of specimens from cases of diphtheria, typhoid fever, tuberculosis, meningitis, rabies, glanders, anthrax, etc.; inspection of slaughter-houses, butcher shops, bakeries, groceries, dairy farms, milk-depots, ice-cream factories, and all places where food is prepared or distributed, hotels, barber shops, etc.; the application of preventive measures, the use of disinfectants, etc.; school and factory inspection.

In addition two other subjects must receive special attention:

1. Vital statistics, which is the bookkeeping of public health, including population, morbidity, mortality, etc. Special stress should be laid on this because it is so often neglected, and because it is so hard to make people see the importance of this branch. It is not spectacular and does not appeal to the general mind, yet is the foundation of progress in health administration.

2. Public-health administration, including the study of laws and ordinances. The importance of public-health work from the sociologic side is beginning to receive the attention it deserves. The health officer should know the foundations of sociologic science as it will enable him to carry out his work with greater satisfaction to himself and greatly increase his efficiency.

A much greater subdivision could be made, but already the list is a long one and the student approaching the subject may well be staggered at the knowledge he is expected to obtain before receiving his degree. Harvard and the Massachusetts Institute of Technology offer eighty-four courses arranged in nine groups, seventy-three of which pertain especially to public health.

In this outline I have included a large part of a medical training, and I hold strongly to the opinion

that a medical education is the foundation of work in preventive medicine. The physician has created the profession and demonstrated its possibilities. He has been the pioneer, and often in spite of the lack of special training, physicians have made very efficient health officers. Failures by physicians have been due to the fact that the public has not recognized the importance of selecting the best-fitted men for such work, and has not generally been willing to pay attractive salaries.

A degree in medicine is not absolutely necessary, although desirable, but the training is essential. I do not at all agree with those who in the last few years have advocated the view that the training a sanitary engineer receives better fits a man for work as a health officer than the training given in medical schools. It is, however, evident that the medical schools must recognize the signs of the times and give a more complete training in preventive medicine than has been the rule in the past. The medical profession must also be alive to the necessity of demanding this training, as otherwise there is danger of seeing a calling, the necessity of which they have demonstrated, pass into other hands.

In looking over the courses offered in the United States at the present time I find a decided lack of uniformity. The University of Pennsylvania offers the degree, Doctor of Public Health, after a course of instruction requiring one academic year, but only those already holding the degree of Doctor of Medicine are eligible. The University of Michigan gives two degrees—Doctor of Public Health, and Master of Science in Public Health. To be eligible for either one of these degrees the applicant must be also an M.D. For the doctorate a two-year course after the degree of M.D. is obtained is required. The University of Wisconsin gives the degree, Doctor in Public Health, open only to those holding the degree of M.D. Harvard University gives the degree, Doctor in Public Health, and in its announcement states that the degree of Bachelor of Arts or its equivalent is required in addition to the degree Doctor of Medicine. In the circular of the school for health officers recently published by Harvard University and the Massachusetts Institute of Technology in conjunction, it is announced that after completing the courses outlined in these two institutions a Certificate of Public Health will be granted. Graduates in medicine in Harvard University and other recognized medical schools are admitted on their records as candidates for this certificate. Bachelors of Science in biology and public health of the Massachusetts Institute of Technology and other recognized institutions are likewise admitted and registered as candidates. The medical degree is not a prerequisite for this certificate, but candidates are advised to obtain it before specializing in public-health work. The statement is made, "Experience teaches that preferment for position and advancement to the higher offices comes more readily to those who have a medical degree."

I would be the last one to advise careless training for men undertaking public-health work yet it seems to me that the requirements for the degree of Doctor in Public Health have been placed too high in practically all institutions, especially with regard to the language requirements. Most of the schools put the doctorate in public health on a basis with the degree, Doctor of Philosophy.

As I see the situation, we need practical health officers more than we do research men or professors. The fundamentals are well known and we need men who are well grounded in these principles, and well versed in their practical application. We have excellent journals which give in each issue abstracts from a wide range of subjects, so that to-day there is little practical information given to the world in any language which is not soon abstracted in journals printed in English. The language requirement, therefore, which is often a difficult one to meet, does not seem to be as important as it was a few years ago.

If it seems desirable to protect the degree Doctor of Public Health by maintaining the standards set, another degree with less strict requirements should be offered, with the object of training men for practical work, reserving the degree Doctor of Public Health for those expecting to do research or to teach. The degree Doctor of Public Health should never be conferred on anyone who has not already earned a doctorate in medicine.

Practically every university in the country, as well as many other schools which are less pretentious, have on their faculties men capable of teaching the fundamental branches needed by the practical health officer, and courses which are easily accessible to the men wishing to undertake public-health work should be given at a large number of schools throughout the country.

In considering a plan for the betterment of conditions it seems to me that the following points are most important:

1. There should be practically uniform requirements as to preliminary education, the training offered, and the degree given.

2. The training offered and the examinations for these degrees should be easily accessible to persons in every part of the country.

3. There should be a combined effort to bring to the attention of the profession as well as of the general public the necessity of special training in public-health matters.

Most of these objects could be accomplished if we had a central authority with power to outline courses which should be given to fit one for public-health work. In our public-health service we have a well-organized body of sanitarians fully equipped for teaching both the scientific as well as the practical branches. This service has officers in every part of the United States, in countries under our authority, as well as in foreign sea-ports. It constantly has under way investigations in inspection, sanitation and epidemiology. The Immigrant-Inspection Service with its wealth of material is under its control. It has a well-equipped laboratory in Washington with thoroughly trained men in all branches. These facilities should be thrown open to students seeking training in Preventive Medicine, or wishing to fit themselves for positions as health officers. I would suggest that this service be given authority to fix standards, to hold examinations, and to grant diplomas to qualified men. These examinations should be open to students trained at any university or college, and held at stated intervals in different parts of the country, just as they are now given by this and other services for other purposes. In this way uniformity could be obtained and a decided stimulus to the study of preventive medicine would be obtained.

TESTS OF VENTILATING PLANTS*

FREDERIC BASS
MINNEAPOLIS

The proper tests of any ventilating system designed for serving rooms of human occupancy depend ultimately on biologic facts. What qualities of the atmosphere are most conducive to the economy of the human organism? What are the ordinary variations from the ideal atmosphere and how does the organism react?

When the engineer designs a structure, he must know the forces that will tend to destroy or strain it, he must know their direction and intensity and he must know from tests the strength of the material which is to withstand the forces.

In the problem of ventilation we assume and, without doubt, correctly assume that the open air of the countryside or of the sea is the normal, most beneficial atmosphere. We know something of its characteristics in a chemical, electrical and physical sense, and we know somewhat less of the variations from the ideal atmosphere in so far as they are significant from the standpoint of the problem of ventilation.

When we attempt to study the structure, the human body, and the effects on it of varying conditions of atmosphere, we naturally find the problem of a most complex nature. I have been trying to study the ventilating problem from this standpoint during a part of the last year. It is a difficult thing for one with only a meager training in biology to attempt, but as a result of the trial, I am convinced that the ventilating engineer, in order to understand the principles underlying his work, must go beyond the mere mechanics of materials involved, and must have an appreciation of the relative biologic values which are fundamental.

In a very recent published article by one of the best known hospital architects of this country, I find the following statesment: *"Without doubt,* this unknown constituent which gives the obnoxious odor or smell to bad air, such as is evident in assemblies, most noticeable in warm rooms as in our nickel theaters, is a harmful factor." Also in the same article: "Let me impress upon you that dirty air kills more people than dirty water, dirty milk, and dirty food combined." In the discussion which followed, a prominent member of the Chicago Ventilation Commission emphasized the importance of the danger of infection from air.

The general impression that the acute communicable diseases can be greatly lessened by improved means of ventilation either by eliminating direct infection or by providing air in superlative quantity, distribution, and quality, is one which seems to me to be erroneous. Direct contact, mouth spray, uncleanly personal habits, are without doubt the most fruitful causes of these diseases. Resistance to infection is perhaps both general and specific. Specific resistance may be in some cases artificially produced, but as far as my observation goes, our knowledge of immunity is comparatively small. That there is such a thing as general resistance, often spoken of by the layman as vitality, that may be reduced by unfavorable environment, is also probably true.

The presence or absence of a ventilating system cannot affect the more effective defense of the body, the specific resistance, but it is possible that the general resistance to infection may be lowered in some cases by lack of ventilation. The demand for ventilation must be largely based on other grounds than that of the preservation of health, and it is perfectly proper that comfort and efficiency should be regarded as of sufficient importance to deserve the effort involved in providing ventilation.

There have been numerous laboratory experiments on individuals, well enough known to this audience, which indicate the relative unimportance to single individuals of the ordinary variations in carbon dioxid content or of air which may contain other substances derived from the presence of human beings in enclosed spaces.

The work of recent years by many experimenters has indicated that comfort may be secured to a great extent by a proper regulation of temperature and humidity, and that one of the proper criteria of a good ventilation system is its ability to furnish means for the maintenance of a correct bodily temperature. "Curves of comfort" have been constructed which indicate temperatures with their associated relative humidities for various occupations. The effect on comfort of air in motion is an important element.

The association of evil results with unpleasant odors is an assumption which is often unwarranted. Our sense of smell is, of all the senses, the least trained and the farthest from standardization, and the connection between offensiveness and toxicity is far from being established. It is, however, easily possible that trouble may result indirectly from offensive odors. The reflexes from such sensations as may be received from the olfactory nerves under ordinary room conditions may, of course, easily cause such irritation that a nearly normal person may feel unable to maintain his full mental efficiency. But such lack of efficiency probably comes from conscious irritation rather than from any direct toxic action. The psychologic factors in ventilation are real and important. It may be that in the ventilation of hospitals they are more important than in other buildings, for the effect of irritation of mind is more disturbing to subnormal than normal physical conditions. Prolonged exposure to irritation of this nature may result in physiologic disturbance.

During the last year I have conducted certain experiments under the direction of the New York Ventilation Commission on schoolchildren subjected to two systems of ventilation. In one room, air was supplied from outdoors, in another the air was recirculated, being continuously washed, lowered in temperature and returned to the room. Not all the characteristic odor of the occupants of the room was removed by the washing. Careful tests, both physical and psychologic, conducted by trained observers failed to show significant differences between the two groups, although the period of observation was four months. The teacher of the room in which the air was recirculated, however, complained that other teachers told her that she ought not to teach in a room in which "fresh air" was not supplied, and she said that her doctor told her it was making her ill. She did not believe that it was good for her, and she complained of feeling ill. The children were perfectly happy and entered no complaints; their physical and mental progress was satisfactory, but as they were but 9 years of age, they had not acquired the olfactory sensitiveness of the older person. The system was good so far as hygienic conditions were concerned, but it probably would not do for adults on account of the irritation resulting from odors.

* Read before the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

The carbon dioxid content of the air of this room did not rise above 30 parts per ten thousand, showing a considerable leakage of air to and from the outside of the building. Air leakage is greater than is usually supposed.

While very humid air prevents the escape of bodily heat by evaporation, it is true that very dry air, especially when warm, may injuriously affect the mucous membranes, although I have no definite information on this point. The artificial humidification of air in cold climates is doubtless a most desirable part of a ventilating equipment. The washing of air to remove dust is of very great importance in certain cases.

If these conclusions are accepted, the requirements of a system of ventilation are that it supply air of proper temperature and humidity without offensive odors; that it supply it in sufficient quantity to maintain the temperatures and humidities within prescribed limits, and to remove offensive odors.

In order that this may be effectively done, the distribution of the inlets and outlets for the air must be carefully selected in accordance with the needs of the situation. Kitchens and toilet rooms should have outlets at the ceiling with accelerating coils as near the base of the vent duct as possible. No air should be forced into such rooms, as it might be expelled into the rest of the building through the doors.

The tests which should be made may be listed as follows: (1) temperatures; (2) humidities; (3) air currents; (4) odors; (5) carbon dioxid content, and (6) dust content.

No standardization has as yet been achieved. State and municipal legislation is almost entirely based on quantity of air, the requirements in many cases being excessive for well-designed systems of air distribution. It is of little value to pump 30 cubic feet of air per person into a room when the person can get but 3 of the 30 cubic feet on account of the lack of good distribution.

The temperatures and humidities should approximate those of the climate as nearly as possibly. In England 58 degrees with 60 per cent of relative humidity is common in the schools; this would be impossible in Winnipeg in winter.

Air currents are difficult to control, as they are extremely sensitive. The control of air currents may be said to be one of the arts of ventilation. In hospital construction, except in crowded city locations, in warm climates open window ventilation may be entirely practicable throughout the year for rooms and small wards. In such cases, only kitchens, toilets and possibly operating rooms need to be ventilated by special equipment such as fans, etc. The determination of air currents is, then, of little importance. The work of Shaw in England in the determination of air currents is perhaps the most worthy of note.

In small hospitals, I have seen excellent results by having vent registers at the ceilings of the rooms connected to ducts terminating at the roof, accelerating coils being inserted. Entering air is not controlled, coming entirely from leakage.

In large hospitals such a system is inadequate. While practicable, it is likely to be expensive in operation. As the building increases in size, the problems of ventilation increase still more rapidly.

The operation of the ventilation system must necessarily be left to the operator of the power plant. It is useless to expect good service from the average engine-room operator without the direction of some person who understands the object of the ventilating system. The operator must be under the direction of one person and not many. The system must be designed with a view to its successful operation, which should mean a careful analysis of demands which are to be made on it. These demands should rest on physiologic standards which are yet far from establishment, although their general nature seems to be well forecasted.

In conclusion, I would again emphasize the point that studies of ventilation system and ventilating equipment be made with their objects clearly in mind, namely: to secure proper temperature and humidity regulation, to keep the air in motion and properly distributed, and to prevent offensive odors from circulation.

THE IMPORTANCE OF STUDYING THE ACTUAL CONDITION OF HOSPITAL AIR *

C. E. A. WINSLOW
Chairman New York State Commission on Ventilation
NEW YORK

Few questions in air conditioning have been more extensively and even acrimoniously discussed in recent years than that of hospital ventilation. We hear on the one hand that costly ventilating plants have altogether failed and that the only way to keep a hospital in good condition is to abandon fan ventilation and admit fresh air by way of the windows. On the other hand, there are signs of a reaction in certain quarters against this view and we hear whispers that even in the most advanced window ventilated hospitals conditions are by no means always ideal, particularly at night and when the superintendent is not in the wards.

Architects and engineers, to say nothing of hospital trustees, find themselves buffeted about in a most confusing manner between confident and contradictory disputants. Ventilating plants which cost many thousands of dollars are lying idle and new hospitals are being built without any artificial ventilation at all, which, if the advocates of fan ventilation should prove correct, means a far greater expenditure for the installation of some system of air conditioning in the future.

The extraordinary thing about it all to the sanitarian is that these sweeping conclusions and far-reaching changes in policy have as a rule been arrived at without any detailed and systematic study such as seems essential in order to establish a safe basis for action. No good physician would to-day diagnose a difficult case by glancing at the patient, without taking his pulse or using the modern methods of clinical diagnosis. Yet hospital superintendents condemn their ventilating plants because a room seems stuffy, without accurate observation of existing conditions, or study of the possible remedies which might be applied, short of a major operation.

The sling psychrometer and the anemometer are as essential to the student of ventilation as are the clinical thermometer and blood tests to the practicing physician. It has been clearly shown by the elaborate experiments of some of the most eminent physiologists in Germany, England and the United States that the discomfort and the physiologic disturbance experi-

* Read before the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

enced in a badly ventilated room are primarily due not to chemical impurities in the air but to heat and humidity—not to respiratory phenomena, but to derangements of the vasomotor mechanism. It is therefore a first essential in studying air conditions to make careful records of temperature and humidity at various points and at various times under various conditions of occupancy. Air conditioning is, however, intimately bound up with air change and air movement, and the removal of stale odors is eminently desirable from an esthetic standpoint even if the organic compounds which produce them do not menace health. Carbon dioxid tests are therefore also of great value in determining accurately the amount of air change which is taking place, and under special conditions may well be supplemented by determinations of atmospheric dust and perhaps sometimes of bacteria.

If tests of the sort outlined above show that the air is clean and fresh and of a cool, equable temperature, one may rest satisfied. If, on the other hand, air conditions prove to be unsatisfactory, it is neither reasonable nor scientific to condemn the system in use, whether it be fan ventilation or window ventilation, without a further effort to find out the exact reason for the trouble. If rooms are overheated it may be because hand-controlled radiators have been left turned on or because thermostatic control valves have been allowed to get out of order. Or it may be because the janitor is overheating a plenum air supply. In one New York school an inspector working under my direction had a thermometer registering to 130 F. exploded by the heat of the air entering a room register. If there is too much carbon dioxid and a stuffy odor in a room, it may be because the ducts are insufficient or because the inlets and outlets are wrongly placed, or because the fans or motors are not being operated at their full capacity. Sometimes the trouble is practically irremediable without costly construction. Sometimes it can be eliminated at no cost at all with the application of a little technical skill in operation. It would seem in general wise before either installing or discarding a ventilating system to obtain scientific data as to the exact shortcomings which exist and the extent to which they could be remedied by minor alterations or more intelligent operation.

Prof. Charles Baskerville and I carried out a study of schoolroom ventilation in New York City in which our staff made over 1,800 observations of temperature and humidity, over 770 of carbon dioxid, over 680 counts of microbes and over 650 counts of dust particles, in addition to many hundreds of special tests of air distribution and a large number of measurements of air velocities. The result of this study was to show in the first place that the hectic accounts of New York schoolroom air which had been spread broadcast were, as Mark Twain said of his own premature obituary, "grossly exaggerated." Only 14 per cent. of the 1,854 temperature records obtained were over 71 F., and only 5 per cent. over 73. Of 773 carbon dioxid determinations, only 15 per cent. were over 10.5 parts and 6 per cent. over 12.5 parts. The average results for all fan-ventilated schools were about the same as for all window-ventilated schools, but individual schools showed marked deviations from the normal. The window-ventilated schools were all mediocre, but some of the fan-ventilated schools were admirable and some very poor, not apparently as a result of defective construction, but mainly from careless operation. In one school an automatic thermograph kept in operation for twenty days never but once fell below 60 F. and never rose as high as 70. In another school, fan-ventilated like the first, the temperature reached 75 on eighteen out of twenty-eight days, and reached 80 on six of them. Only by a detailed and exact study was it possible in the first place to clear the air conditions of the New York schools in general from unfair aspersions, and in the second place, to find out that in certain particular schools there were evils to be remedied, and in the third place to indicate the importance of janitorial supervision in remedying those evils.

I am at present conducting a somewhat similar study of air conditions in a commercial establishment employing about 4,000 clerks, in the course of which my inspectors have made 2,185 temperature and humidity records, 245 carbon dioxid determinations and over 300 measurements of air velocity. The results are not yet fully analyzed, but they have already shown clearly that the building is grossly overheated and that the fault lies in large part with the disrepair into which the thermostats have been allowed to fall. We are finding that in certain ducts designed for fan ventilation, no fans have ever been installed, while in others the fans are running at only a fraction of their efficient speed. In other ducts the register openings are so badly adjusted to the present population that while some rooms receive more air than they need, others receive much less. It is quite possible that somewhat radical improvements in ventilating construction may have to be made in this building, but it would be most unwise to undertake such improvements without first finding out what the present plant is actually doing and what it could be made to do with the best operation.

I cite these cases merely to show the method of approach to this scientific problem of air conditioning and to contrast what has been done by school authorities and industrialists with the scanty evidence on which hospital ventilating plants have been defended or condemned.

Two years ago I suggested to Miss Alice L. Lake, a graduate student of mine in the Department of Nursing and Health of Teachers' College, that she attempt to gain some idea of what air conditions in New York hospitals actually were. The results[1] are distinctly significant and, like the school results cited above, point to the factor of operation as one of prime significance. Miss Lake obtained seventy-five records of temperature and humidity in six different hospitals. The general wards in all the hospitals but one were free from overheating, forty-three records out of fifty-two being below 70 F. Two hospitals in particular showed all temperatures closely controlled between 60 and 69, and it is worthy of note that of these two good hospitals, one is ventilated on the plenum system and the other by windows. On the other hand, there is one hospital in New York which is notorious for its overheating, and here Miss Lake obtained three records between 70 and 74, and two of 75 and over.

The overheating of the children's wards was much more marked, five out of eleven records being over 70 F. In one hospital the children's ward was 76 in the daytime and 57 at night, which seems a needlessly violent contrast.

1. Lake, Alice L.: Journal of Home Economics, October, 1913.

The air of all the hospitals was very dry, irrespective of the method of ventilation, sixty-three out of seventy-five records being below 40 per cent. of saturation. In the operating rooms the temperature of course was very high (in six cases out of twelve, over 74 F.) and the humidity correspondingly low (in five out of twelve cases, 30 per cent. or below, in none over 40 per cent.). It seems to me a serious question whether such very dry air may not promote harmful evaporation from the exposed body cavity. Artificial humidification would not only lessen evaporation but would diminish the cooling effect and so make it possible to avoid the extremely high temperatures now generally considered necessary.

My aim in presenting this paper is merely to call attention to the fact that there are serious problems involved in hospital air conditioning and that there are recognized scientific methods of attacking such problems which have so far very rarely been applied. Physiologic studies have shown that air temperature and air humidity have profound effects on the human organism, and in hospitals, in which you are dealing with persons of subnormal vitality, these effects must be intensified. In schools and factories serious attempts have been made to find out what air conditions are being maintained and how they can be improved. In many hospitals the operation of the ventilating plant is left in unskilled hands with no supervision, until bad conditions force themselves on the senses, and then the whole system in force is discarded without an attempt to find out what is really wrong.

Is it not time that this problem should be recognized as one demanding the serious scientific study of those responsible for hospital control? In an institution devoted to healing, the atmospheric condition surrounding the patients is clearly one of the most important environmental variables involved. It should not be controlled by snap judgment or by the dogmas of a fan-ventilation cult or a window-ventilation cult. The particular hospital and the particular ward should be studied and its trouble diagnosed as you study your patients to diagnose their diseases. Automatic thermographs should be installed at typical locations and their hourly records watched by some one in authority, and supplemented by occasional observations with the sling psychrometer. Once a year or so a test should be made of the whole plan with carbon dioxid determinations and anemometer measurements to see if windows or ducts are supplying a requisite amount of air. Thermostats should be overhauled and fans rated and duct velocities measured. Only by such studies can it be determined whether fan ventilation or window ventilation is efficient in a given case, and if not, how results can be improved. Only by such studies can the best future policy in building new hospitals be wisely and safely determined.

Medicine and Its Tributaries.—I like to think of medicine in our day as an everbroadening and deepening river, fed by the limpid streams of pure science. The river at its borders has its eddies and currents, expressive of certain doubts and errors that fringe all progress; but it makes continuous advances on its way to the ocean of its destiny. Very gradual has been the progress of its widening and deepening, for it is a product of human ingenuity and artifice, and only skilled engineers could direct the isolated currents of science into the somewhat sluggish stream of medical utility.—Herter.

HOSPITAL VENTILATION FROM THE POINT OF VIEW OF THE CLINICIAN *

JAMES ALEXANDER MILLER, M.D.
NEW YORK

In general, it may be stated that the attitude of the clinician toward ventilation in hospitals consists, with a considerable degree of unanimity, in a reaction away from artificial systems of ventilation toward a system approximating as nearly as may be outdoor conditions, that is, open windows. An explanation of this attitude is not difficult to find. On the one hand, in the increasing popularity of the open-air method of treatment for many diseases, and on the other, in a diminishing confidence in the adequacy of artificial ventilating systems as usually installed and operated.

It may be worth our while to pause and examine more closely these rather far-reaching conclusions and the basis on which they rest. If as a result our confidence in these convictions is somewhat shaken, compensation may perhaps be found in a stimulus to more careful study of this whole important subject. Such a study would appear to be sorely needed.

We may accept with little fear of contradiction the clinical fact that the open air is most valuable in many diseased and abnormal conditions. Beginning with tuberculosis, this method of treatment has been successfully adopted for many other diseases, notably pneumonia, anemias, heart disease, various nervous disorders, sepsis, typhus and typhoid fever, etc. Does it therefore follow that the nearest possible approach to the open air represents the ideal condition of the hospital wards?

In certain other diseases we are accustomed to avoid the open air in our treatment, especially when any degree of exposure to cold or drafts is concerned. For example, in acute catarrhal inflammation of the respiratory tract such as laryngitis or bronchitis, or in acute kidney disease, arteriosclerosis, especially in elderly persons, acute rheumatism and the like. It is apparent, therefore, that as clinicians we wish to discriminate in the atmospheric environment of our patients.

It is this which makes the problem of ventilation in general hospitals housing patients with all varieties of disease more important than in almost any other kind of building and, moreover, more difficult. It is this also which has forced the demand for outside balconies for the use of certain patients and smaller wards to make intelligent grouping of others possible. This leaves us still, however, the problem of the general wards, to be ventilated in such a manner as to offer the most favorable conditions for the majority of patients and to do harm to none. Can this best be done by the open-window method? We hardly appear to be in a position to answer this question satisfactorily.

What, after all, is this open air on which we insist so strongly? Is it anything but the atmosphere with varying degrees of temperature, moisture and pressure in varying degrees of motion, together with certain impurities, chemical, bacterial or dust? Do not each of these factors vary with every climate or locality and in each locality with every day? If so,

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* Read before the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

which factors are the important and active ones in producing the good effects of open air which are noted both in health and in disease?

Recent observations would lead us to believe that the more important factors are the temperature, humidity and air movement.

Carbon dioxid would appear to be robbed of its former terrors, as also are the insidious so-called organic volatile poisons. Dust and bacteria in excess are always to be avoided, and certain varieties are harmful even in small amounts. In the open air as such, can we adequately control these factors, and if we could, do we know just the ideal combination we would have?

We have undoubtedly made distinct advance in the recognition that the effect of air is largely on the surface of the body as a whole and not simply due to the fact that the air is to be breathed; but do we know accurately just what this action on the body is or how it varies with the innumerable changes both in the air itself and in the human subject of different age and physical condition?

Some contributions to our knowledge we indeed have. The effect of atmospheric temperature, humidity and barometric pressure on the blood-pressure, pulse rate and body temperature both in health and in disease has been studied by several observers, notably Collis and Pembrey,[1] Leonard Hill, Howland and Hoobler,[2] Pomeroy,[3] Gardiner and Hoagland.[4] The results of these studies are not uniformly striking, but in general appear to show that the blood-pressure tends to rise in low temperatures and with increasing barometric pressure, and that it falls with increasing humidity and rising temperature, that the body temperature varies to a slight degree directly with air temperature and that the pulse rate is slightly but less uniformly affected by atmospheric changes. Hoobler[5] draws the conclusions from observations similar to the foregoing that "the method of ventilation best adapted to the maintenance of blood-pressure is that which most nearly approximates out-of-door conditions." This appears a sweeping assertion when one considers how variable such outdoor conditions are.

James[6] emphasizes the importance of marked alterations in the temperature of wards as opposed to the uniform temperature at any one level. His belief in the benefit of such alternations is based on general clinical observations and ascribed to action on the vasomotor system, but no definite evidence is presented. Both James and Thompson[7] lay great stress on the important quality of "freshness" in outside air which they suggest is lost in artificial systems of ventilation and which is not as yet capable of detection by physical or chemical means. Thompson particularly emphasizes the olfactory sense as the best-known test of this quality.

It is difficult to conceive of just what such a quality may be which is not measurable in terms of temperature, humidity, air quantities and movements or detectable impurities, and its existence is certainly questionable. Such assumptions are liable to divert attention from the important problem of attempting accurately to analyze atmospheric conditions as they affect the human body and to record these effects in definite terms of physiologic response.

The studies on temperature, blood-pressure and pulse rate already quoted are steps in this direction, but are not entirely satisfying.

I have attempted to duplicate the results obtained by Howland and Hoobler in children with whom change of blood-pressure followed promptly change from cold outdoors to warm indoors and vice versa. My observations were with adults with various diseases, and the changes of blood-pressure were far from being uniform or convincing. It is possible that the age of the patient is an important factor. In other observations in normal young adults made in collaboration with Prof. F. S. Lee for the New York State Ventilation Commission, the effect of high temperature (86 F.) and humidity (80 per cent. relative) over a period of four hours, was shown by a definite rise in pulse rate and less marked diminution of blood-pressure and little or no change in body temperature. Similar observations at moderate temperatures (68 F.) and low humidity (50 per cent. rel.) showed a distinct fall in pulse rate and temperature with little change in blood-pressure.

In another series of observations the subjects after the four-hour exposure to heat and humidity were quickly exposed to cold air (from 60 to 65 F.) and drafts from fans; as a result, pulse rate fell and blood-pressure rose. These observations go to corroborate those of Howland and Hoobler as well as others, and would suggest that the clinically good effect of cool and dry air may be measurable in terms of pulse rate, blood-pressure and body temperature.

Such studies, however, are mere beginnings and point the way to many unsolved problems before we can state with definiteness just how open or fresh air produces good effects and how we should differentiate to best advantage in the selection of cases and in the relative importance to be placed on the various factors in the air itself. We need some such data before we can say that all we need in ventilation is to open the windows and let in the air. The outside air may be cold when our patients need it warm, it may be dry when they need it moist and vice versa, and moreover, the dust problems of open windows cannot be overlooked.

Do we know just the optimum degree of heat, moisture or velocity of air movement? We have general ideas of the bad effect of very high temperatures and humidities, but do we know in reducing these when to stop to best advantage and do we know really very much about the drafts and their effect?

For years ventilating engineers have been asking us what condition of air we want, and we have no reply but "fresh air." This evidently may mean any variety of that very changeable article. It may well be that open windows are better than artificial systems, but we cannot say so definitely until we can state just what we are trying to accomplish. When this is stated the problem becomes one of engineering and economics.

But there are other problems involved than the mere air itself and its method of action. Important among these is that of air distribution. Recent advances in our knowledge tending to show that the action of the air is particularly on the surface of the body increases this importance. By open window ventilation are we

1. Collis and Pembrey: Jour. Physiol., Nov. 20, 1911.
2. Howland and Hoobler: The Effect of Cold, Fresh Air on the Blood-Pressure in Penumonia of Children, Jour. Dis. Chil., May, 1912, p. 294
3. Pomeroy: Interstate Med. Jour., 1911, xviii, 731.
4. Gardiner and Hoagland: Tr. Am. Climatol. Assn., 1905.
5. Hoobler: Trans. Fifteenth Internat. Cong. Hyg., iii, 116.
6. James: Am. Jour. Med. Sc., November, 1906.
7. Thompson: Med. Rec., New York, Feb. 9, 1907.

not apt to get too much air for some patients and too little for others? Can we regulate the problem of drafts near the window and pockets of stagnant air in the corners?

I myself do not feel sure that the so-called drafts are as much to be dreaded as we are accustomed to think. Although our text-books ascribe some eighty odd diseases and conditions directly or indirectly to exposure to cold and drafts, yet recent studies tend to show that these conditions are usually due to bacterial infection in which exposure plays no or only a minor part. Chodounsky[8] and others have made very memorable investigations in this direction, and our own observations on young men exposed to chilling and drafts from fans after long-continued exposure to high temperatures demonstrated nothing but agreeable effects.

This whole question of the effect of low temperatures and drafts on the body needs more careful study.

Then again it is evident that open window ventilation can never be automatically regulated. In wards this regulation would naturally devolve on the nurses, although the physicians should of course supervise it. With the multitude of other duties can we trust physicians and nurses systematically to employ the care and intelligence necessary? This depends on a more definite knowledge of the conditions we really wish to obtain and on greater attention to the air conditions of the wards than we are at present accustomed to observe.

But with all the possible difficulties that we are able to perceive in window ventilation what are we to think of its alternative, the artificial system?

It is hardly too much to say that as these systems have usually been installed and operated they have been most unsatisfactory to the clinicians and hardly less so to the ventilating engineers themselves. As already stated, the fault is partly that we have not known just what conditions to demand, and consequently the physical basis of air conditioning has predominated. Moreover, intelligence in the operation of such systems has been too frequently noteworthy by its absence.

There can be no doubt that the strictures of Thompson, James and others are largely deserved; but can we entirely place the blame on the artificial system *per se?*

The physiologic method of studying ventilation must replace the purely physical, or the two must be used in conjunction and in intelligent harmony, if we are to obtain the best results, and all of this means much additional study, on which we have only just begun.

Certain it is, however, that even now the artificial system alone seems insufficient and that periodic flushing of wards with air from open windows seems reasonable and necessary. But on the other hand, it seems probable that open windows alone will be unsatisfactory.

That the open air with all its variations when directly admitted to the wards may by no means always prove of just the desired condition, and that its proper distribution to all points of the ward may be most difficult, seems very probable. It would appear, therefore, that at present a combination of these two so-called systems is desirable, especially when we remember that in winter a heating system is always necessary and that ventilation is a natural corollary of the heating problem.

After all, however, the whole question falls back on the unfortunate fact that really we do not know. It would therefore appear futile and foolish to argue dogmatically about ventilation until some of the fundamental problems involved in the effect of atmospheric air on the healthy and diseased human body are better understood.

The present discussion represents merely an effort to state the situation in the hopes of stimulating further research into this important branch of sanitation in its relation to our more strictly medical problems.

18 West Fifty-First Street.

8. Chodounsky: Erkältung als Krankheitsursache, Wien and Leipsic, 1911.

LABORATORY EXPERIMENTS WITH AIR*

FREDERIC S. LEE, PH.D.

Dalton Professor of Physiology, Columbia University College of Physicians and Surgeons; Member of the New York State Commission on Ventilation

NEW YORK

I take it that it is my part in the present symposium to present a summary of what laboratory investigation has contributed to our knowledge of air in its bearing on the problem of ventilation. In so far as the contributions of the laboratory are conclusive they may be expected to serve as a guide to the architect and the ventilating engineer in devising means to provide human beings, living within buildings, with air that is fitted for human use. Air may be rendered unfit by a great variety of agencies. For our present purpose it is desirable to limit our consideration to the unfitness that results from the immediate presence of human beings.

That human beings vitiate the air surrounding their bodies has been known from earliest times, and at different stages in the progress of investigation such vitiation has been ascribed to different factors. More than a century before the discovery of oxygen, Mayow[1] ascribed the death of animals confined within closed spaces to their consumption of the "nitro-aerial spirit" of the air. The presence in expired air of "noxious vapors" was also early recognized. Later, nitro-aerial spirit became oxygen, and noxious vapors carbon dioxid, and the idea early became prevalent that lack of the one constituent and accumulation of the other were together responsible for the bad effects of rebreathing air that had once been breathed by human beings. Throughout the nineteenth century, many laboratory experiments were performed relating to the relative rôles played by the deficiency of oxygen and the increased quantity of carbon dioxid, and there resulted much difference of opinion. But, notwithstanding the inadequacy of its proof, the belief became firmly established that both of these gases, but more especially the carbon dioxid, are the chief agents in producing the evil effects of the air of crowded assemblies, and this idea is even now widely prevalent.

Meanwhile, early in the nineteenth century, the notion arose that expired air contains a poisonous sub-

* Read before the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Mayow: Tractatus quinque medico-physici, Oxford, 1674.

stance, other than carbon dioxid, which can be detected by the sense of smell. Gavarret[2] in 1851 seems to have been the first to subject this idea to the test of experiment, and his work seemed to establish its validity, since he found that animals confined within a closed space died, although oxygen was supplied as fast as it was consumed and carbon dioxid was removed as fast as it was formed. A few others obtained analogous results, notably William A. Hammond[3] in America in 1863. In 1887 Brown-Séquard and d'Arsonval[4] of Paris gave a great impetus to investigation of this theory by reporting confidently their experimental results in which the expired air of men and dogs, condensed and injected into animals, seemed to produce symptoms of intoxication, and they defended vigorously the presence of a toxic organic substance in such air. Although many subsequent researches by others contradicted their conclusions, the theory of the presence in expired air of poisonous, volatile, organic matter, probably protein in nature, came to be widely accepted, and doubtless is accepted still in many circles. Du Bois Reymond gave the name "anthropotoxin" to this substance.

It thus seemed to be firmly established, by what seemed to many persons accurate laboratory investigations, that the air problem involved was a problem of chemistry, that the physiologic problem was a problem of respiration, and that the ventilating problem was a problem of removing chemically impure, and supplying chemically pure air in sufficient quantities to supply the needs of the individual.

But this calm of supposed scientific certainty was never so universal throughout the laboratories, and in recent years it has become so disturbed that the subject of what constitutes purity in air and to what are due the evil effects of living in impure air has assumed a new aspect. In the first place, faith in the adequacy of lack of oxygen and accumulation of carbon dioxid has been practically abandoned in the laboratories. Even as early as 1842 Leblanc[5] found that in crowded assemblies the oxygen content of the air rarely falls below 20 per cent. and in 1849 Regnault and Reiset[6] proved experimentally that oxygen can be diminished to 10 per cent. in inspired air before respiration becomes quickened. Müller[7] in 1858, Bert[8] in 1870, Speck[9] in 1878, Friedländer and Herter[10] in 1879, and others obtained similar experimental results. As to carbon dioxid, too, Regnault and Reiset, Müller, Friedländer and Herter, and others demonstrated that large percentages of the gas, much larger percentages than exist in crowded rooms, can be inspired without marked effect. Von Pettenkofer,[11] too, in 1862, seems to have had a clear idea that neither the decrease of oxygen nor the increase of carbon dioxid that occurs in ill-ventilated places is sufficient to produce the symptoms observed in the occupants of the rooms. It was he, nevertheless, who contributed the thought, ever since potent, that the amount of carbon dioxid that is present may be regarded as a convenient index of the harmfulness of the air. However valuable this suggestion may have been at the time, in the light of present knowledge its usefulness has ceased and it ought, I believe, to be discarded. The later work of Hermans, Flügge, Paul, Hill and others now seems to eliminate oxygen and carbon dioxid wholly as factors in the situation except under very unusual circumstances.

Furthermore, a number of notable investigations have rendered the theory of an atmospheric, organic poison untenable. Here it is only necessary to mention a few of the prominent names of investigators, such as Hermans[12] in 1883, Haldane and Smith[13] in 1892, and Billings, Mitchell and Bergey[14] in 1895. In 1911 Rosenau and Amoss[15] attempted to revive the idea by experiments in which guinea-pigs were supposed to be sensitized anaphylactically by the injection of the residue of condensed expired air; but Weisman,[16] in a careful repetition and continuation of their experiments, has been unable to confirm their results. The matter may therefore, I think, be regarded as finally settled that expired air contains no volatile, toxic organic constituent.

Simultaneously with the abandonment of oxygen, carbon dioxid and anthropotoxin, a totally different way of looking at the physiologic problem has appeared. In 1883 Hermans[12] of the Hygienic Institute in Amsterdam, convinced of the inadequacy of the oxygen and carbon dioxid theory, finding by his own experiments no evidence of the existence of an organic poison and observing that his own bodily temperature in crowded theaters and churches rose from 0.3 to 0.6 C., put forward the suggestion that the evil effects of air that has been vitiated by human beings are due simply to the inability of the body to cool itself because of the surrounding elevated temperature and increased moisture. This suggestion was not discussed by him in great detail and was not supported by experimental evidence of his own, but it provided the much needed germinal thought that has since developed into the most rational of all proposed explanations of the observed facts.

Briefly stated, this explanation is as follows: Living beings constantly produce and give off to their environment an excess of bodily heat. This heat must be constantly carried away from the body and is carried away partly through the lungs in the expired air, but chiefly through the skin by the processes of radiation, conduction through the clothing and the evaporation of perspiration. It is obvious that to insure this necessary and healthful removal of heat there is needed an atmosphere about the body that is neither too hot nor too humid. If it is too hot radiation and conduction are prevented; if too humid, the evaporation of perspiration is interfered with; and if the two conditions exist simultaneously the result is a rise of bodily temperature with concomitant interference with the body's well-being. According to this conception the air problem involved is a problem of physics, and not of chemistry; the physiologic problem is a problem that begins with the skin and not the lungs; and

2. Gavarret, Cited by Weisman (Footnote 16).
3. Hammond: A Treatise on Hygiene with Special Reference to the Military Service, Philadelphia, 1863.
4. Brown-Séquard and d'Arsonval: Compt. rend. Soc. de biol., 1887, iv, 814. This article was followed by several others by the same authors.
5. Leblanc: Ann. de chim. et phys., 1842, v, 223.
6. Regnault and Reiset: Ann. de chim. et phys., 1849, xxvi, 299.
7. Müller: Liebig's Annalen, 1858, pp. 107, 257; Sitz. Ber. Wiener Akad., 1858, pp. 33, 99.
8. Bert: Leçons sur la physiologie comparée de la respiration, Paris, 1870.
9. Speck, quoted by Hill, Flack, McIntosh, Rowlands and Walker (Footnote 23).
10. Friedländer and Herter: Ztschr. f. physiol. chem., 1879, iii, 19.
11. Von Pettenkofer: Liebig's Annalen, 1862-1863. Suppl. Vol. 2, p. 1.
12. Hermans: Arch. f. Hyg., 1883, p. 1.
13. Haldane and Smith: Jour. Path. and Bacteriol., 1892, pp. 1, 168, 318.
14. Billings, Mitchell and Bergey: The Composition of Expired Air, Smithsonian Contrib. to Knowl., Washington, 1895, p. 989.
15. Rosenau and Amoss: Jour. Med. Research, 1911, pp. 25, 35.
16. Weisman: Biochemical Studies of Expired Air in Relation to Ventilation, Inaug. diss. Columbia Univ., New York, 1913.

the ventilating problem is a problem of maintaining the proper temperature, humidity and motion of the air.

That this explanation of the matter in question is correct can, I think, hardly be doubted in view of the abundant evidence in its favor that has emanated from the laboratories. To speak the names of the chief contributors is to mention some of the prominent of the world's physiologists and hygienists. Rubner and von Lewaschew[17] of Berlin have contributed very exact data on the general action on the human body of moist air, the relation between the moisture and temperature of the air and the elimination of water and carbon dioxid from the body, and the adaptability of man to high and low temperatures.

The year 1905 was fruitful in contributions. Then began the many studies of Haldane[18] of Oxford and his pupils on the physiologic action of hot and humid air, which have been pursued partly in the laboratory and partly in industrial works, such as the tin mines of Cornwall and the British cotton-weaving sheds. Haldane has insisted, probably correctly, that the ill effects produced by the air of ill-ventilated places are dependent not simply on the temperature as indicated by the dry-bulb thermometer, or on the absolute or relative humidity alone, but on the temperature as indicated by the wet-bulb thermometer. "If this exceeds a certain point (about 78 F. or 25.5 C.)," he says, "continuous hard work becomes impracticable; and beyond about 88 F. or 31 C. it becomes impracticable for ordinary persons even to stay for long periods in such air, although practice may increase to some extent the limit which can be tolerated. In moving air, on the other hand, the limit is extended upward by several degrees." In ordinary living rooms a wet-bulb temperature of 60 F. is probably the most rational one.

In the year of Haldane's first article, 1905, there appeared also several very valuable and suggestive contributions by the hygienist Flügge[19] of Breslau, and his assistants, Heymann,[20] Paul[21] and Ercklentz.[22] The experiments of these investigators were conducted on human beings, some in health and others in various pathologic conditions, who were enclosed within a ventilation chamber and subjected to various conditions of temperature, moisture and movement of air. The results emphasize very strongly that the evil symptoms ensuing on confinement in closed rooms are due to the heat stagnation and the inability of the occupants to "unwarm" their bodies. More recently Leonard Hill[23] of the London Hospital and his colleagues, Flack, McIntosh, Rowlands and Walker, have performed similar experiments, also on human beings, and have obtained similar and striking results.

I have thus mentioned the more prominent of the many investigations that have emanated from the laboratories in this much-discussed field in which pure science and applied science meet. The main features of the laboratory contributions which may be regarded, I think, as now fairly established are that the evil effects of living in the air of crowded, ill-ventilated rooms are due, not to lack of oxygen, not to accumulation of carbon dioxid, not to the presence of a volatile organic poison, but to excessive heat, excessive humidity, and lack of adequate movement. Notwithstanding the fact that more than thirty years fruitful in experimental confirmation of it have now elapsed since this doctrine was first enunciated, it is strange how little it is yet known outside the laboratories and how prevalent are the notions that carbon dioxid and a mysterious organic poison are the evils to be guarded against.

If I were to criticize in general the laboratory investigations my criticisms would be three: first, that the investigations have been confined too much to the study of extreme conditions, in contrast to the conditions of ordinary life; secondly, that the individual experiments have been continued for too brief intervals; and thirdly, that they have not shown, beyond a few of the more easily demonstrated bodily functions, such as rise of bodily temperature, on what functions of the complex living mechanism the unfavorable air conditions act deleteriously.

The newest of all the many investigations in this field, that of the New York State Commission on Ventilation, is endeavoring to obviate such criticisms by making a more profound study of the matter than has yet been undertaken. We possess a ventilation chamber of a capacity of 1,150 cubic feet, which is provided with apparatus by which the air of the chamber may be confined and rebreathed, or renewed at any desired rate, may be maintained at any desired temperature and humidity, may be kept quiet or in motion, may be removed, washed and recirculated, and may be given a desired chemical composition. In this chamber from one to a half dozen persons may be confined for any desired number of hours. On certain days they engage in definite mental tasks, on other days they perform a definite amount of physical work, under a definite combination of air conditions. By the quantitative study of a considerable number of bodily functions, such as bodily temperature, the sensitivity of the skin, blood-pressure and pulse rate in the reclining and standing positions, the relation of oxyhemoglobin to oxygen, the respiratory exchange, the size of the dead space of the air passages, carbohydrate and protein metabolism, the production of heat, the duration of digestion, and various phenomena of the urine, an endeavor is being made to learn in what respects, if any, the physiologic functions and the mental and physical efficiency of the individual are altered by alterations in air conditions. This work is now being actively carried on, but the results are not yet ready for publication.

In this connection I may be permitted to mention a series of experiments which I have recently performed in my own laboratory in collaboration with Dr. E. L. Scott, and which are not yet completed. I have been interested to know whether the apparent physical inefficiency of the individual in an atmosphere of high temperature and high humidity can be objectively demonstrated as a muscular phenomenon. Because of the necessity of using isolated muscles, we have found it most convenient to use cats as the subjects of experimentation and have confined them within a small ventilation chamber for a period of six hours each. An abundant supply of outside air has been sent through the chamber and the only change in conditions has been that with certain animals the temperature has averaged 21 C. (69.8 F.) and the humidity 54 per cent. With

17. Rubner and von Lewaschew: Arch. f. Hyg., 1897, xxix, 1.
18. Haldane: Jour. Hyg., 1905, v, 494. Haldane, Pembrey, Collis, Boycott and Cadman: Rep. Dept. Com. on Humidity and Ventilation in Cotton Weaving Sheds, London, 1909 and 1911.
19. Flügge: Ztschr. f. Hyg., 1905, xlix, 363.
20. Heymann: Ztschr. f. Hyg., 1905, xlix, 388.
21. Paul: Ztschr. f. Hyg., 1905, xlix, 405.
22. Ercklentz: Ztschr. f. Hyg., 1905, xlix, 433.
23. Hill, Flack, McIntosh, Rowlands and Walker: The Influence of the Atmosphere on Our Health and Comfort in Confined and Crowded Places, Smithsonian Misc. Collections, 60, 23, Washington, 1913.

others the temperature has been raised to 33 C. (91.4 F.) and the humidity to over 89 per cent.; that is, one group of animals has been kept under favorable conditions, the other group has been given the air of a hot and humid New York summer day. Under the latter conditions the animals' bodily temperature rises, on an average, 0.5 degree C. or nearly 1 degree F. At the end of the period of six hours the cat is taken from the chamber and killed, and certain of the muscles are removed, attached to levers and stimulated by regularly applied electric shocks. The contractions are recorded graphically and the total duration of the working period and the total amount of work done before the muscle becomes exhausted are determined. It is found that the three muscles studied, the diaphragm, the extensor longus digitorum and the sartorius, are capable of performing a total amount of work which is less by 14, 18 and 26 per cent., respectively, in the animals exposed to the high heat and humidity than in those that have been subjected to the more comfortable atmospheric conditions. It would thus appear that the inefficiency of an individual under such unfavorable air conditions is not a matter of the nervous system only as might be inferred, but a matter of the muscles as well. Furthermore, we find that along with the muscular effect, the sugar of the blood is diminished from 0.069 gm. per cent. to 0.060, a diminution of 13 per cent. The meaning of this is not yet clear, but it helps to indicate that the effect of unfavorable air conditions on the individual is more far-reaching than has heretofore been demonstrated.

It is by studies of this general nature that the laboratory is yet capable, I believe, of throwing much light on the general problem of the air in its physiologic relations. We must consent to a detailed analysis of the problem. To reiterate over and over again that air that has once been breathed is "bad" air and that "bad" air is "bad" air, without defining in what its badness consists, is a sin against not only scientific reasoning, but also common sense—and yet I have seen that sin committed. To urge, moreover, the great virtues of "fresh" air without making an effort to determine in what the virtues of "freshness" consist, is suggestive of a mind that has not yet reached the sophomoric stage of its development—and yet such minds exist. The opponents of the laboratory doctrine of fresh air sometimes add to the gaiety of nations by speaking of such air in England as "tinned" air and in America as "canned" air. They forget that a canned thing is a dead thing, something without the power of moving of itself or of stimulating others. But the fresh air that we advocate with its coolness, its comparative dryness, and its constant motion is anything but lifeless. Its qualities are those which conduce most to the efficiency of the individual. Constant monotony in air conditions should be avoided like monotony in other conditions of life. It is not my function here to advise regarding ventilating methods, but it is obvious, I think, that no ventilating method can be expected to be effective unless it is based on the facts regarding human well-being which the laboratory is able to supply.

The Catholicity of Medicine.—The human being is a part of the whole of nature and cannot be understood without it. What is wanted is a satisfactory general view of the process of the universe. Possessing this, we shall find the key in our hands which will open the most secret recesses of the art of medicine.—Gomperz.

HOSPITAL VENTILATION FROM THE VENTILATING ENGINEER'S POINT OF VIEW *

A. K. OHMES
NEW YORK

Inscribed under the statue of Hygeia gracing the entrance of a foreign hospital are words with the following meaning:

> One names as the greatest earthly fortune, Health. I contradict; a greater one is Convalescence.

It is difficult to express more forcefully in a few words the noble purpose of the hospital, and the responsibilities of those who are most intimately connected with its management. It also implies to architects and engineers that there can be no building worthy of greater effort than a hospital. One of the important items in the construction and operation of a hospital is that of providing "ventilation" for its various rooms. Ventilation means to supply pure fresh air (from some source, no matter from where) and the removal of vitiated air, both in as simple, positive and inoffensive ways as possible.

There is, of course, no medical man who does not value "pure fresh air," who is not deeply interested in securing it, whether in the so-called "natural" way (by means of open windows) or in the so-called "artificial" way (by means of a ventilating system) and who would not treat this subject with an open mind, ready to hear arguments for and against either method. Similarly every architect and engineer should treat the subject with an open mind, ever realizing that by far the greater portion of humanity lives and remains happy and healthy in its homes, where only the so-called natural or window ventilation exists. The special object of this paper, however, will be to bring forth arguments of how far artificial ventilation might prove helpful in solving the problem of the positive, simple and effective supply of fresh air and the removal of vitiated air, irrespective of wind and weather, under every-varying conditions, in many different departments of a hospital.

Let us be frank and acknowledge that a number of persons in any enclosed space are rarely in perfect agreement as to the quality and freshness of the confined air, and that particularly in the cold season of the northern climate, whatever the reason, the most glaring disagreements exist. This condition is well known, and it makes no difference whether the fresh air enters a room through an open window or is introduced by an artificial ventilating apparatus. We must further acknowledge that it is difficult, nay, useless, to combat the idea that the best and purest air is not secured from and through open windows when surroundings are park-like—in other words, ideal; but that it is easily combated when windows face ill-smelling, dirty and dusty streets, courts or back yards.

It can therefore be easily proved that artificial ventilation is unnecessary in a spacious country home when inhabited by few persons, but on the other hand, it has been proved that humanity does wilt and waste away in overcrowded factories, schools, offices and laboratories unless artificial means for supplying fresh air and for removal of vitiated air, in addition to window ventilation, are provided.

* Read before the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914

With proper application of engineering data and skill, fixed quantities of air can be moved through long distances and heights, even though large and powerful machines may be required in the most difficult cases. As records of long distances we must think of the artificial ventilating systems required for the building of railroad tunnels, where air for the tunnel builders was driven to their working places through pipes frequently from 6,000 to 8,000 feet long.

As a record of height, we may mention the Woolworth building in New York City, covering an underground area of 225 by 292 feet. The vitiated air of the cellar (largely containing the engine and boiler rooms) and of the basement, containing underground safe-deposit vaults, swimming pools, restaurants, kitchen, etc., is collected, and thence, with an ordinary blower, requiring but little power, discharged above the roofs. In one case the horizontal distance is as much as 360 feet and the vertical distance up to the fiftieth floor about 710 feet, making a total air travel of 1,070 feet.

For over ten summers an artificial cooling, humidifying and ventilating plant has been in operation in the New York Stock Exchange, where 1,500 persons are busily engaged with closed windows, as is necessary where cooling is desired. Of course, this room is not cooled to the constant winter temperature of 68. The room temperature best liked by the average person seems to bear a fixed relation to the outside temperature and the vapor contents. The most suitable inside temperatures with corresponding outside temperatures at about 60 per cent. humidity are as follows:

68 outside	68 inside
75 outside	72 inside
80 outside	74 inside
85 outside	76 inside
90 outside	78 inside

Many banking rooms having very large windows are located on the street level of lower New York City, but have, nevertheless, artificial ventilating plants. While windows in large banking rooms can be but seldom opened in the winter months because the quietly sitting bank people complain of unbearable drafts, it is even preferred in many cases to keep them closed in the summer months. The reason for this is that the dust from the streets, the cinders from smoke flues, and the latest nuisance of gases from the motors of automobiles and trucks will come into the rooms with the "fresh air" as secured by the windows. Noise from street traffic is also found most objectionable for rooms of this kind.

It would, finally, be extremely simple to cite many theaters, factories, laboratories, toilets, etc., to impress further the importance of artificial ventilation in our advanced civilization, with its ever increasing indoor life.

As to the air supplied by a well-designed ventilating apparatus, proper operating conditions taken for granted, it may be worse or better than that secured from the windows for reasons already stated. It is simple to temper the air with our common steam and hot water heating systems and their common heating surfaces without taking away any of its life-giving qualities. Air can be introduced or taken out near the top or near the bottom of a room. In the greatest part of the United States it is best to supply air at the top, because a larger amount can be introduced for the greater part of the time with the least draft; but in the summer months it is frequently found that the best results are secured in "reversing" the air currents, that is, introducing the air at the bottom and removing it at the top. The reversing of the air currents can be easily, cheaply and positively accomplished by the operation of a single damper.

Dusty air can be easily cleaned of its larger mechanical impurities without undue expense by means of air washers and air filters. When air washers are used there is, in case of non-operation, always the possibility and danger of water becoming stagnant. Dry filters of the cheese-cloth kind are, therefore, more "fool proof" from this point of view, but not so effective as far as dust removal is concerned. The use of air washers for filtering purposes will at the same time moisten the air, and will also cool the air at such times as the outside air is relatively dry. Under what conditions air moistening is important to health has as yet not been scientifically settled, but it mainly depends on whether the climate is ordinarily dry or moist. With dry filters, air-moistening pans may be used, and again there is the danger of stagnant water in case of non-operation, if the pans are not drained out properly.

Artificial cooling with dehumidifying, while probably important in warm and moist climates, is on account of the usually high operating expenses, very seldom done, but cooling effects by means of desk fans, due to rapidly moving air currents, may be secured at little cost.

Finally, we may add ozone to the air at little expense for "bacteria removal," etc. While again the researches of the good of this treatment of air are not conclusive, it seems, nevertheless, to be the concensus of opinion of doctors who have given the matter consideration that as much harm may be done to the human beings as to the elusive microbe.

We are, therefore, quite positive in making the statement that we can "condition" the air supply of an artificial ventilating plant to almost any extent. On the other hand, the less "conditioning" necessary, with the exception of the heating and cooling of air and of adding moisture (which depend entirely on the climatic conditions), the better usually the ventilating apparatus is. Air for any artificial ventilating apparatus should preferably be taken from a point that is so pure and clean as to make any other "air conditioning" unnecessary, which, unfortunately, is but seldom possible in our crowded cities.

As to the heat required for warming the cold air coming into the windows or as supplied by the artificial ventilating apparatus, only two heat mediums need be considered at the present time, and they are steam and water.

Steam is usually at low pressure, and with the ordinary commercial heating surfaces the air can be warmed to about 140 F. If water is the heat carrying medium it may be circulated by gravity actions or by pumps, and in either case it is with commercial heating surfaces difficult to heat the air to more than 130 F. Steam (as well as water, if its circulation is forced by pumps) has been carried great distances from one central point, and a distance of a mile is not unusual any more.

After these few, necessarily short, general remarks on ventilation and ventilating systems for different kinds of buildings, the question now arises, Where does the hospital stand in relation to ventilation, and where does it materially differ from other buildings so far as

ventilation is concerned? Consider first of all that any large hospital contains many different rooms, serving may different purposes. For the greater part of this country, active air supply and exhaust ventilation are usually required in operating rooms, operating theaters, bathing and therapeutic departments, dispensaries and underground boiler and engine rooms, kitchens, laundries, etc. Practice has also proved that the air supply must be warmed to different temperatures. A low temperature is necessary in cases in which a heat removal is desired, and a high temperature must naturally be carried for rooms having persons with scant or no clothing.

Exhaust ventilation for all rooms in which odors, gases and vapors are created is absolutely necessary. Among these rooms we may mention toilets, utility rooms, slop and specimen closets, laboratories, store rooms, animal rooms, etherizing and sterilizing rooms. It is of course realized that there may be conditions in any climate in which in each instance any room may be built of such large area and height as to make artificial ventilation unnecessary. If it were attempted it would probably be found that building and operating costs would be greater, provided as good conditions were to be secured in these rooms without artificial ventilation as with artificial ventilation.

Bedrooms for doctors and nurses should be so well located as not to require any artificial ventilation.

At present, however, when the necessity of artificial ventilation of a hospital is considered, the ward seems to be the one point on which the entire discussion centers; and frequently if the wards have no artificial ventilation, but many of the rooms mentioned above have, it is simply stated that the hospital has "no artificial ventilation."

As to the wards, it must be said that they usually occupy the choicest location of the site. Furthermore, most hospital sites are naturally well chosen as far as sun exposure and prevailing winds are concerned, and regulations as to unnecessary and objectionable noises are enforced in all large cities. In addition, the rooms are large, figures showing that the cubic contents per bed in a ward are usually four times that provided per person in good offices and eight times that in a schoolroom. Again, most wards have windows on two or three sides, making through draft possible. Admitting that conditions are in every way ideal, what, then, are the possibilities of securing in all kinds of climatic wind and weather conditions the much-wanted air renewal by the windows?

The opening of windows is ordinarily not objected to by anybody when the inside and outside temperatures are substantially the same, or when the outside temperature is higher. If it is some degrees cooler outside than inside and the cold air enters through windows, it mixes but exceedingly slowly with the warm room air, and consequently it sinks to the floor, thus creating a difference of temperature between floor and height of head, and chilling of the occupant may take place. In addition, excessive drafts are also occasionally created under careless openings of windows on gusty, windy days. Of course the doctor, busily engaged or walking through the room, or a patient in bed covered well with blankets, will but seldom find drafts and unequal temperatures objectionable. Still, drafts exist, as we all know, and any heating engineer can quote many experiences where even the down-drafts due to heat transmission from tightly closed large windows in business and amusement places, or in churches and halls, are found annoying by most persons. If the same persons do not object to in-drafts from open windows in a hospital, it is because of the usual uncomplaining ways which practically all persons pursue in dealing with any arrangement the "doctor" makes, the great and good man in the time of need and distress. His word is law, and it is but right that it should be—in the ward and sickroom.

It is not in the province of the ventilating engineer to decide whether or not, and how far, unequal temperatures and cold drafts may be harmful to the human body, all the more to the ailing human body. From my own observations in other rooms the habit and disposition of each individual should be taken into account. Consider also that there are wards for bodily and mentally sick patients, for quiet and restless feverish patients, for patients with external and internal sicknesses, for patients that require and do not require bed treatment, for patients with contagious diseases, etc. The matter is still more complicated when we consider that there are wards with all these different kinds of patients for adults, children and babies.

As a final consideration, may it not be proper to point out that hospitals, and with them wards, are necessary on the Panama Canal as well as in Alaska? It is questionable that there is a ventilating engineer who would advocate the closing of windows in a ward in the former place, with perhaps 110 in the shade, and rely for the best air conditions on the artificial ventilation without cooling, or that there is a doctor who would maintain that it is best for securing ventilation to open windows in—50 F. and let—50 air directly enter a window instead of warming it first over steam coils. It is evident that climate conditions form an important part in deciding whether or not artificial means of supplying air in a ward are necessary and valuable.

Generally speaking, it is, of course, but right for the ventilating engineer to presume that if certain methods of ventilation in a certain climate are appreciated by healthy persons, such methods ought to be also appreciated by sick persons! Indeed, who will question the correctness of the Samaritan view that if at all possible sick persons should be still better taken care of?

If, therefore, the men in charge of the best bank, business and commercial houses, department stores, insurance offices, theaters, lecture rooms, etc., find it so often profitable to provide artificial ventilation for the same, why should it not be good for a ward? These and similar questions the designing engineer seeks in vain to answer to himself when he sees his ventilating plants in other buildings usually operating successfully, even though for obvious reasons not pleasing to every one, but finds his work in one department of the hospital lying idle for no specific or scientific reasons. If as a reason an undue high operating expense is given, or questions are dismissed with such familiar answers as "no artificial" ventilation is necessary in "our climate" for "our wards" with "their large windows," "fine exposure," "special bed arrangement," with our "carefully instructed nurses manipulating the windows and window ventilators," no particular harm is done. If, however, the non-operation is put on the score that all artificial ventilation is wrong, much harm is done to those who perforce have to be in places less fortunately located than most wards in hospitals.

That the operating expenses should present no insurmountable obstacles, the accompanying table may prove.

In looking over the schedule it will be noted that the installation expenses are considerably higher for an artificial ventilating apparatus than those of merely making provision for heating by radiators an equal amount of air entering the windows. It will increase the building expenses all the way from $12.20 to $19.80 per bed, according to the apparatus selected. While this would seem considerable, still, it cannot be called excessive when one considers that the entire cost of building construction and equipment of a hospital is frequently from $4,000 to $5,000 per bed; in other words, the building expenses are increased approximately 0.5 per cent. No allowance, however, has been made for the possible increased cost of providing the required space conditions of blowers and flues. There are cases in which the additional cost is neglible, whereas in other cases the additional cost is considerable.

AVERAGE THEORETICAL COSTS OF INSTALLING AND OPERATING WINDOW AND ARTIFICIAL VENTILATION *

Temperature of average winter	45°	35°	25°
Number of days on which the air supply must be heated	150	180	210
Neighborhood of assumed condition	Norfolk	Cleveland	Min'polis
Cost of installation per bed:			
Window ventilation with increased radiators, piping, also increase of boiler capacity	$ 9.60	$11.70	$14.20
Artificial ventilation with tempering coil, motor, duct work, fans, and cloth filters.	26.60	27.00	27.40
Artificial ventilation with tempering coil, motor, duct work, fans, air-washers and pumps	29.40	29.80	30.20
Cost of operation per bed at 4,000 cubic feet per hour:			
Cost of steam at 35 cents per thousand pounds, which includes cost of coal and water, removal of ashes, also cost of labor, rental value of space occupied, and interest, depreciation and maintenance on cost of boiler plant. Per bed for time stated	2.21	3.78	5.83
Totals:			
Window Ventilation:			
Cost of steam	2.21	3.78	5.83
10 per cent. interest, depreciation and maintenance of plant	.96	1.17	1.42
Total per bed	$3.17	$4.95	$7.25
Artificial ventilation (air filters only):			
Cost of steam for heating air as above	2.21	3.78	5.83
Cost of electricity at 2 cents per kilowatt hour driving fans	3.36	3.26	3.16
10 per cent. for interest, depreciation and maintenance on investment	2.66	2.70	2.74
Total per bed	8.23	9.74	11.73
Artificial ventilation (air washer and humidifying air):			
Cost of steam for heating air as above	2.21	3.78	5.83
Cost of steam for humidifying air (approximate)	.60	.80	1.00
Cost of electricity at 2 cents per kilowatt hour for driving fans and pumps	6.28	6.00	5.80
10 per cent. for interest, depreciation and maintenance on investment	2.94	2.98	3.02
Total per bed	$12.03	$13.56	$15.65

The results are average conditions for hospitals of say 500 patients in which coal and labor is of average cost. Operating expenses will be more for hospitals not having their own power plant. No cost and operating expenses for heating of any kind are included in these figures.

* At 4,000 cubic feet per bed, per hour, under various climatic conditions; twenty-four-hour service for running blowers, exhaust fans, pumps, etc., and 365 days per year.

It should also be noted that the cost for electric current appears rather high, but the artificial ventilation has been figured to run all the time (twenty-four hours per day and 365 days per year), and air is to be supplied under pressure by a blower and exhausted by an exhauster.

Similarly the cost in operating expenses under the same climatic conditions are approximately increased from $4 to $8 per bed per year, according to the apparatus installed. Hospitals seem to expend not less than $800 per bed per year for the maintenance and operation, interest charges, etc. Consequently on this basis the operating expenses would be increased by the artificial ventilation from 0.5 to 1 per cent. If we were to reduce the operating expenses for artificial ventilation to a daily basis we would find that they would amount to the small sum of from 1 to 2 cents per day per bed over the window ventilation.

These figures are based on heating the air by a steam-heating apparatus, and the difference in expense for hot water heating will be slightly less.

In conclusion, may I be permitted to express the hope that the efforts of this symposium may at least result in obviating the oftentimes reckless criticism of all artificial ventilation by the medical profession when discussing ward ventilation? If not, the prediction would seem in order that there will be retrogression instead of progress in the ultimate solution of proper ventilation of some of our subways and tunnels, of some of our factories with poisonous dust and gases floating in the air and inhaled by the workmen, of dingy offices, of ill-smelling moving picture show places, of some of our stuffy hot engine and boiler rooms, our schools and lecture rooms, our hot kitchens and laundries, etc. Living and healthful conditions depend in thousands of these places on artificial ventilation, and if it were altogether discarded, more institutions for taking care of sick and maimed must be built in the future than ever before. On the other hand, it is also realized that it is best not to have air conditions depend solely on artificial means, and that all the so-called "air conditioning" never has to most people, if indeed to any at all, the same effect as at times an open window, which is particularly true in the warmer weather. In our city and manufacturing life, however, ideal air conditions do not now, and probably never will exist, and therefore artificial ventilation will always be called on to do its share in overcoming the shortcomings of window ventilation in many of the hundreds of different confined spaces required by our complex civilization.

A COMPARISON OF THE HOSPITAL OF OLD WITH THE MODERN STRUCTURE *

T. J. VAN DER BENT
NEW YORK

Unreliable history only can tell us about the hospital of long ago. We are not well informed as to how the first hospitals were built, and thus it is difficult to make a fair comparison between the old and the new. Very little data can be depended on. A few plans have come to us, which, together with some stories of perhaps the worst type of old hospitals, have given us a little light. Altogether, our information is very insufficient, very scant, and unreliable. We may consider it as certain that the church — the Christian church — is responsible for the earliest hospitals. Whatever did exist in Greece and Rome in the shape of shelters and lodging houses, which at times were also used for the care of the sick, were only the forerunners of the real hospital.

* Read before the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

As far as I have been able to gather from historical descriptions, the erection of the early hospitals, which began in the first centuries of the Christian era, is credited to the charitable spirit of the times. This, to my mind, seems hardly possible. In no other direction can be observed in these early ages the least idea of charity or humanity. Life, and especially life of the poor, was considered of no value. The higher classes showed absolute indifference to the intense sufferings of the lower classes. How then could there be a question of charitable or humanitarian principles?

More probably, it seems, that the first hospitals became a social necessity. During the early centuries of Christianity, when political and religious disturbances were continuous, when the misery of the masses was of such gigantic and threatening proportions that the fortunate classes became anxious about their own health and safety, the latter began to take care of the sick poor as a protection to themselves. Not charity, but self defense, self protection and egotism originated the first hospitals. Here and there we may find an isolated example in which the original cause of the hospital construction was real charity, but these cases are very rare exceptions.

It was natural that the Church took the initiative in hospital building. The rich, the nobles, the rulers had other matters to trouble themselves with. It was in the interest of the Church to erect and manage the hospitals, to have them under their strict rules, and they were built as additions or parts of their churches, cloisters and monasteries. Only the servants of the Church had sufficient knowledge to give the sick some good treatment, and they were the only ones who could afford the time. The ordinary people had to work from early to late in order to eke out a miserable existence. They could not spare their time, nor could they give financial support to the construction. Only those who did not have to work for a living, and to whom the struggle for life was unknown, those who to a great extent were supported by the labor of the poor—those had abundance of time. They were the worldly rulers and the servants of the Church, and it was fortunate for the benefit of science and arts that this condition existed, that convents and monasteries would take care of those who wished to give their lives to deep studies and develop their artistic abilities without having to worry about their daily bread. Through their poorly paid, or unpaid labor, the very poorest, however, did contribute to the construction of the early hospital.

The very early hospitals of these times were far from being as objectionable as the later ones, and this was mainly due to their utmost simplicity and to the absence of many objectionable features which were added later. A simple large ward with windows, although very small, on two or three sides, at one end of the room an altar, and some connection to a service building formed practically the entire establishment. A combination of two wards, with an altar in the center, or three wards in T shape, four wards in cross shape, built on the same principle, and with practically no service rooms, was all, and if not overcrowded, these hospitals could not be called so very bad. The building material was practically the same as what we use now, except the interior finish. Before glass was known, the windows had to be very small to protect against the cold. Italy had hospitals in the early centuries in which marble, mosaic and tile floors were used. This was not done on account of sanitary principles, but as a protection against the unconquerable flea pest and other vermin, which was considered annoying, but not known to be dangerous or infectious.

The hospital of the early centuries underwent during the following centuries up to the beginning of the ninteenth century considerable change, but real improvements from a sanitary point of view were not made. A great many which had been built early were spoiled by additions at a later date. Overcrowding became customary. Individual beds were soon unknown, and from the beginning of the middle ages to the end of the eighteenth century the condition of the hospitals was so terrible that they were considered not better than slaughter houses. Even in the enormous hospital Hôtel Dieu, in Paris, very often 5,000 patients were taken care of, three to four hundred in a ward, four to six adults in one bed, or six to eight children in one bed. This will give an idea how far the inhuman treatment of the sick went.

Before the Middle Ages, hospitals could be considered at least as places where some people were cured, but during the latter times the number of cases cured must have been exceptionally small. Of the number of those who left the hospital, the standardized rule being that they had to leave when they were able to walk, the greatest percentage returned very soon as hopeless cases. The great epidemics of pest and leprosy may have been to blame to a great extent for this cruel and inhuman treatment of the sick. A few exceptions may be found in Germany, Italy and especially England. A great improvement, however, was made only after fire destroyed, in 1772, a part of the Hôtel Dieu, and it was then planned to build a better hospital than existed before. The Academy of Sciences nominated in 1786 a committee to investigate the mistakes made in the old Hôtel Dieu, and to prepare recommendations for the new building. The suggestions made by this committee, who made a very careful investigation of all defects of the old hospital, who went to Germany and England for new ideas, were carried out only in part. One of the principal recommendations was that every patient should have his own bed, which made an end to the former fearful condition of overcrowding. Objection was made to arched ceilings from a constructional as well as a sanitary point of view. Windows on two sides of the rooms were suggested, and the wards running from east to west exposed to the north and south. A staircase entirely open for free air circulation was also suggested.

The report had a great many good points which were entirely ignored in the reconstruction of the hospital, but the greater part of the recommendations were carried out as given in the first report of 1786, or the later report of 1788. The principles laid down by these reports brought about an enormous improvement in hospital construction. The great overcrowding of patients was forever done away with. A warning was issued against closed courts and crowding of buildings, separation and classification of patients was recommended and many other methods, which, as yet, are considered the foundation for the hygienic hospital construction. But not until 1829 did this bear fruit, and the first good results were then obtained with the erection of the first pavilion hospital in the city of Bordeaux, which soon was followed by many others.

The recommendations of the foregoing reports were carried out to practically the full extent only in the Lariboisiere Hospital, 1846 to 1854, and this institution became the model for many new hospitals throughout France and England. The English hospitals followed even more closely the original recommendations, for instance, in strictly avoiding closed courts, which were seriously neglected in the French institutions. The English hospitals, therefore, show better isolated buildings and many more proper hygienic features.

Besides several hospitals erected in France after the example of the Lariboisiere, closely following the same, one very poor imitation was built and opened in 1878, namely, the new Hôtel Dieu in Paris. During the process of building, this hospital was criticized in such strong terms that numerous changes were made during its construction. The final result, however, was full of flagrant mistakes against the main hygienic principles then recognized.

Only thirty-six years have passed since then, and during those few years the progress in different directions has been enormous.

It took practically fifteen hundred years before it was generally considered as necessary to build hospitals according to certain hygienic principles. It took about fifty years more properly to digest these newly discovered laws of sanitary building and to prepare for the execution of these laws in part, but it took only thirty years after that to carry these principles into every part of hospital construction and management.

In all factors contributing to the care of the sick, the greatest progress has been made between the last half of the nineteenth century and to-day — sanitary building, medical and surgical science, hospital administration, lighting, heating and ventilating, sanitary plumbing and last, but not least, proper nursing.

This brings us up to the present day, after what may seem to you the most superficial review of hospital history. It was not my intention to give you any hospital history. Members of this assembly know more about it than I ever will know and can give me more details and more principles than I can give them; but my few references to hospital history will point out just what I wish to call to your attention in comparing the old and new hospitals. We may feel satisfied to-day and praise our present age of discoveries and look down on the construction, or attempts at construction, of former times, and only admire the work of to-day.

It is certainly true that a great many hospitals have been built during the last decade, each following as closely as possible the main teachings of the present-day medical science and hygiene. There is a limit to everything, and the absolute carrying through of all these details and principles is, as yet, not possible. Financial restrictions or difference in local conditions will prevent this.

However, I would like to ask any member of your association here present to name offhand half a dozen of the new hospitals which do not come in for a great amount of criticism and where a great number of hygienic principles — let me call them hospital building rules — have not been neglected.

From 1788 to 1878 the medical world possessed a most magnificent set of rules compiled by a committee of eminent, wise and careful men after a thorough investigation. Not one out of every ten hospitals built during that century followed or carried out the majority of these recommendations. Not a single one carried them out to the letter. In this connection we must not forget that the architects in those days had very little to say. It is a well-established fact that then the architects carried out orders, and that their words, their opinions or their recommendations were entirely ignored — never received any consideration.

What, then, is the reason that the established principles were ignored in hospital building during that century?

The answer we may give as soon as we know the answer to another question. Why do we find in the great majority of the present-day hospitals numerous flagrant violations of the same early sanitary principles and of the many new teachings brought about by the scientific progress of the last fifty years?

1. The use of absorbent building material in the interior of hospitals is unsanitary.

Notwithstanding this, wood floors are used in many hospitals of to-day, and by preference, even by many who know the objections to them.

2. Cracks in floors are insanitary.

They fill in with dirt — the dirt consisting often of dangerous material which cannot be removed.

Why, then, do so many new hospitals use wood floors which have the greatest number of joints — eventually cracks?

There are in existence numerous other materials which may have some objectionable features in other directions, but not from the hygienic point of view. Still, wood floors are used and not for reasons of economy.

Where is our great progress?

Wood floors were used in hospitals more than one thousand years ago. The report on floors of the Virchow Hospital in Berlin condemned the floors which were already installed and they were subsequently removed. This report should be sufficient to any one and finally settle the question as to the objectionable quality of wood floors. But I can safely say that unless something is done by some organization or association of men of influence in the medical profession, wood floors will continue to be used in many more hospitals yet to be built until the misuse or the abuse of our forests makes wood prohibited through high cost.

A third example:

3. Closed courts and crowded hospital buildings were condemned in the report of 1788.

Why then do we see the greatest overcrowding of buildings on small city blocks in so many of the new German hospitals, and also in some in the United States?

4. Cross-ventilation of wards is considered essential.

How then can we excuse hospital wards with windows on one side only? How can we allow hospitals to exist where wards have no windows, but only secondary, or let us call it second-hand exposure? I have visited hospitals in the great cities of the United States in which several patients occupied rooms which received light and air through one or more rooms in front of them, and in those hospitals not even forced ventilation was used. It may be that such extremes are rare cases, but still they exist, and in my opinion such conditions are as fatal as the plural occupancy of beds in the old Hôtel Dieu.

These few examples are enough. They are only of those principles which we know. How many mistakes

are made against sanitary principles in such cases where we do not, as yet, know?

Is it not time that some attempts were made to prevent these mistakes which have been recognized as such, and also is it not time for investigations to be made, in order to answer numerous questions relating to hospital construction?

This paper was not prepared to obtain a lengthy discussion. A subject of this magnitude cannot be scientifically covered in a paper to be read in fifteen minutes. I have only stated a few facts, pointed out a few mistakes and shortcomings of the hospitals of to-day, while there are hundreds and more to be considered. It is of no benefit to our hospitals if we indulge here in long arguments and discussions about where to lay the blame for the existing conditions.

I am of the sincere opinion that your Association has it within its power to do an everlasting good work of direct benefit and immediate influence on the present hospital construction.

The committee of 1786 of the Paris Academy of Sciences laid down the first laws for hospital construction and by its reports did such splendid work that it is still of the greatest influence to-day. Is it not possible to continue this good work and bring it up to date?

Could not a committee be nominated by your Association, consisting of prominent and able men who would carefully prepare a program, a complete set of rules for good hospital construction?

This program should be as liberal as possible in its limits and its scope, in order to avoid conflicts with either shortness of funds or difficulties of location. Good hospital construction could be, to a great extent, standardized.

A list of the absolute requirements and a list of positively forbidden methods could be given as a nucleus. This list could eventually, through your combined efforts, be enacted into law in every state, thus forever banishing most flagrant violations of hygienic principles. This committee could go further still. A great many points in hospital planning and construction need investigation and study, in order to state positively what is to be forbidden or what is to be recommended.

Your committee could, therefore, in its report point the way how to obtain the proper solution and how to decide the unanswered, unsolved problems. The limitation and scope of mechanical ventilation is only one question out of many, although a very important one.

There are, however, many others, for instance, limitation of hospital equipment; the extent and limitation of ward service rooms; the standards for sanitary floor and wall construction; a list of the most desirable materials and of such materials which under certain circumstances may be allowed, although not desirable, etc.

In each of these problems cost is the main factor. Structural or mechanical difficulties play the next important part. The entire world would be benefited by the work of such a committee, and if this Association were willing to take up this work, praise and credit would be given to it in later history.

With an open mind as to the importance of the hospital of to-day, every one of you will have a clear understanding of the importance of the hospital of the future. In order to combat disease successfully, the importance and influence of the hospital will increase from year to year, not on account of charitable principles, but from the point of view of self-defense and self-protection, which, as I have stated before, in my opinion have been the true origin of the first hospital.

ABSTRACT OF DISCUSSION OF SYMPOSIUM ON AIR PROBLEMS IN HOSPITALS

ON PAPERS OF BASS, WINSLOW, MILLER, LEE, OHMES AND VAN DER BENT

Mr. Edward F. Stevens, Boston: I have given a great deal of thought to the subjects of heating and ventilation, although I also found no absolute and definite solution of the problem. When planning for my hospitals I try to bear in mind what my old professor once told me, that the ideal temperature—he being a New Englander—is that of a pine forest in some of our New England towns on a beautiful June day. If we can gain some such temperature for our hospital wards we are, perhaps, approaching a solution. The ideal June day would not have an exact temperature of 68 or 70, but it would be fluctuating, with occasional movements of air. Is it not reasonable to suppose that if our patients in the wards should have the condition which nature has given us on ideal days in June we should be getting somewhere near the ideal condition? Of course, as has been brought out, the different sections of the country demand entirely different treatment as to the conditions of the air. I have not found it necessary in New England and the middle South, for instance, to use forced air. I have been able to accomplish good results by taking the air in at either the windows or doors, but always by exhausting the air from the room. The most important thing is to get the foul air out, for if we give the outside air a good chance it will come in. If we have a forced ventilation we should also have a duplicate natural ventilation. I have been in many hospitals where the air did not seem to be good. The superintendent would say that the fan did not seem to be working. The engineer apparently had not provided any natural ventilation. It is most important to get the air out of the toilets, utility rooms, sink rooms and everything of that sort, making the fans for that sufficient in volume, or perhaps putting the rooms on separate fans so as to be sure that the foul air is taken care of without being forced into any other part of the building. I believe the operating suite should have a separate system from the other part of the hospital. Mr. Van der Bent's history of hospitals suggests a standard which might be met. He speaks of the use of wooden floors and such things as many years ago were condemned. Why should not the hospital people be guided by a specialist just as we go to a specialist in the medical profession? He diagnoses the case and gives us a prescription. If we do not follow it, it is our fault if we do not get relief. Shouldn't we insist on advising our clients what we consider are the best materials and leave it to them? If they do not care to follow our advice the results may not be so satisfactory as they might otherwise.

Mr. C. E. A. Winslow, New York: The work of the New York State Commission on Ventilation is largely devoted to general and fundamental mechanical and physiologic problems. Such a committee as was just suggested on the special practical problems of hospital ventilation would be of great value. Such a committee and the New York State Commission might cooperate to great advantage. Possibly the conclusion might be drawn that Professor Lee and I were in disagreement as to two points in which we are really in complete accord. Professor Lee spoke of the fact that carbon dioxid does not indicate poison in the air, which is of course quite true. I use the carbon dioxid test merely to see how much air change there has been. It is a valuable test for this purpose to show how far the air in the room has been changed. The other point is with regard to the question of a constant as opposed to a variable temperature. I spoke of it as an achievement to maintain the temperature of a school between 69 and 70. This is desirable in order to prevent overheating, but a change to a lower temperature can at any time

be obtained by throwing open the windows. It is perfectly simple to get these variations, which I think are very desirable. I hope those concerned with hospital management will give thorough consideration to the question of cooling. So far as we know the heat of summer is far more harmful than the cold of winter. We have much more evidence of the pathologic effects of heat than of cold. It is as practicable to be cool in summer as to be warm in winter, although somewhat more expensive. Mount Sinai Hospital has taken the lead in providing a cool room for the children in summer. I think that ought to be developed. I hope we shall ultimately have central points in the great cities where cool-day nurseries will be located.

MR. ARTHUR K. OHMES, New York: My experience in various buildings would show that there is no "constant temperature" and that the most suitable temperature depends to a certain extent on the outside temperature. The best inside temperature in the winter months is from about 68 to 70 degrees, but the best inside temperatures in the summer months are considerably above this temperature, as has been given for the New York Stock Exchange and which inside temperatures are best liked by most of the members. We have had cases in factories when with 65 degrees inside temperature and 85 degrees outside temperature the workingmen spoke of going on strike because it was too cold. They considered that their health was being impaired. We have also seen cases in which people have fainted away in working-rooms maintained at 60 degrees when 90 degrees prevailed outside. In my opinion there is no such thing as a "constant inside temperature," and when a man may be perfectly healthy and happy in 65 or 60 degrees temperature in the winter months he may be most unhappy in the same temperature when it is 90 degrees outside. There are physical reasons for this which physicians should know.

MR. T. J. VAN DER BENT, New York: Several years ago I visited the Belfast Fever Hospital, where the wards practically have no windows, only small windows and a door opening on a balcony at the rear end of the ward. No side windows existed. This hospital has existed for ten or more years. The patients get only forced ventilation, air being supplied by mechanical means. Is there on record any information about that place? Does that hospital stand out as an unsatisfactory or bad hospital? In the doctors' and nurses' section the windows can be opened; in the patients' rooms windows cannot be opened.

DR. BYAM HOLLINGS, Boston: From time to time the question comes up with us as to how to overcome the foul air. One solution has been to open the windows. Whether the fans and the ducts were the cause of our foul air I cannot say, neither can I say whether the engineer was backward in his care of these things. These papers have brought these matters to a focus so that those of us who are not thoroughly skilled in the mechanical side of ventilation may be guided to meet the trouble.

DR. CHARLES H. COOK, Natick, Mass.: I am not an expert but I know how many times excellent reports and papers are simply embalmed in the secretary's records. An excellent idea would be to appoint a committee to embody these ideas, to standardize them, to get legislation, or attempt to do something. I do not expect to live to see this movement materialize in anything very definite, but I would like to see it begin. I would like to see these papers and the discussion serve as the foundation of a movement that would be far-reaching. I would not favor the appointment of a committee from the floor. A report might be made at some future meeting as to the line of work. I know it takes time, but only in that way can results be obtained.

DR. H. M. BRACKEN, Minneapolis, Minn.: I happened to speak to Dr. Hornsby just now on a matter that has a bearing on this last suggestion, namely, a committee. There is no reason why a committee should die. If good work is to be done a permanent committee is needed. This can be appointed by the Council on Health and Public Instruction. There is a commission with which Mr. Winslow is quite familiar working along this line. This commission is quite liberally supplied with money, I believe. I would suggest that the Council on Health and Public Instruction be requested to take up this hospital question. It could appoint a committee that would give the subject special attention.

DR. T. A. SHALLON, Philadelphia: With reference to the natural method of ventilating, especially for certain cases, we, in the Jefferson Hospital, tried the experiment of a glass solarium. This has been an absolute failure. We had it constructed in three divisions, so that the glass could be partially or totally removed. We found on hot days, even though the sun was not shining the glass would absorb a certain amount of heat, making it practically unbearable for the children. For that reason we have had to construct stands for ice in the center of the room and to cause the air to circulate around the ice to make it habitable for the children.

DR. JOHN A. HORNSBY, Chicago: Sears, Roebuck and Company, in Chicago, employ a good many thousand clerks, and the working-room windows cannot be opened. They have mechanical ventilation. The Swift and Company packing plant depends wholly on mechanical ventilation. They are really putting into practice Professor Winslow's suggestion as to keeping cool. Under the rules of the Association the scientific sections exist solely for the the purpose of discussing scientific matters. So, when I took up the question of the study of air problems with the secretary of the Association and the secretary of the Council on Public Health it was agreed that we should make some sort of recommendation to the Council at this meeting. Dr. Baldwin unwittingly violated the fundamental rules of this Association. He appointed a committee composed of Messrs. Van der Bent, Winslow, Lee, Bass, Ohmes and Miller. The appointment meant simply the creation of some sort of nucleus, and it grew into this symposium, the intention being to ask the Council for the appointment of a mixed permanent commission to study not only the air problems in hospitals, but also air problems of a nature similar to those operating in hospitals. It was not to interfere with Mr. Winslow's commission working in New York, and not to duplicate any of the work being satisfactorily done in Chicago by the commission on ventilation. I would like to have this commission that Dr. Baldwin appointed maintained. I think the gentlemen who are members of that committee should add to their number such men as Ransdell of the Navy, who has done that brilliant piece of work on air problems in battleships, and Kerr of the public health service, and then that these men should go to the Council on Health and Public Instruction and ask for recognition or appointment at the hands of the Council with a view to giving weight to its proceedings so far as the medical profession of the country is concerned. Added to that list should be such men as Hoover of Cleveland, Joseph L. Miller, Chicago, Dr. Bracken, in public health work up in his country, and George B. Young, health commissioner of Chicago. There are phenomena that we realize and that we cannot explain at all, and, as a sort of side line to the other men's studies in this problem, if such men as Miller, Hoover and Goldwalter could coordinate their observations it would be helpful to such men as Professors Lee, Bass and the others.

MR. C. E. A. WINSLOW: I did not understand that there was any committee as yet. We were simply asked to take part in a symposium. I should not feel that this group would have the right to ask the Council to appoint them. I think the matter had better be taken up freshly, without reference to the contributors to this symposium.

DR. HORNSBY: Dr. Baldwin's conspiracy included the members of the symposium. The work would have a little better standing, coming from the American Medical Association than if it were an independent body. I think the thing to do is to make representations to the Council. Perhaps it would be better for the officers of the section to ask for a continuation of this commission.

The Prerequisites for the Study of Medicine.—He who purposes to study medicine should have in high degree three gifts, not one of which is common among mankind, yet all of which he must have: the power of reliable observation, intellectual endurance; loyalty.—Minot.

CHRONIC FOCAL INFECTION OF THE NOSE, THROAT, MOUTH AND EAR*

JOSEPH C. BECK, M.D.
CHICAGO

Chronic focal infection may be located anywhere in the body, but there are certain anatomic structures which are most frequently affected. These are the structures which possess recessions or pockets and which communicate with the external world. There are, however, some that do not have these characteristics and still may be the seat of focal infection with the whole train of symptoms of chronic toxemia and changes in consequence thereof. The most frequent sites of chronic focal infection may be divided into groups as follows:

1. Recessions or Terminal Pockets: meibomian glands; lacrimal glands; nasal accessory sinuses and mastoid cells; tonsils and adenoids; salivary glands and ducts; pulmonary alveoli and bronchi; gall-bladder and ducts; pancreas and ducts; appendix; uterus and fallopian tubes; prostate and seminal vesicles; pelvis of kidney, ureter, bladder and urethra; skin-glands, as sweat and sebaceous; mucous glands.
2. Tubular Structures or Ducts: gastro-intestinal tract; tear-duct.
3. Glandular or Parenchymal Tissue: lymphatic glands; compound lymph-glands, as Peyer's patches, lingual tonsil; liver, pancreas, spleen, muscles; ductless glands, as thyroid, adrenals, thymus and hypophysis.
4. Endovascular Tissue: endocardium and intimas of arteries and veins; lymph-vessels and lymph-spaces.
5. Serous Membranes: peritoneum; pleura; pericardium; synovia; perineurium; dura.
6. Pathologic Tissue: cavities in teeth; alveolar or apical necroses, and death of pulp, with or without alveolar fistulas; recession of gums, as pyorrhea; abscess or necrosis elsewhere in the body; infection about nails, and hair follicles.

While the subject can not be considered complete and comprehensive without considering all the groups, as mentioned above, it shall be my aim to devote myself to the chronic focal infections of the mouth, nose, throat and ear only, first, in so far as they may influence the other focal points of infection, secondly, the secondary toxemia and changes in the tissues and fluids of the body.

Before taking up the subject of infection one should study the question of body resistance and immunity, in other words the normal condition.

RESISTANCE

When is one in perfect health, and how may this condition be recognized?

In my opinion, perfect health is that state of the organism in which all the functions of the body are carried on without hindrance, and the body-weight is normal and remains so. Exposure to infection and other forms of disease (barring accident and senility) do not readily develop in such individuals. Health is further characterized by a normal mental state, there being no anger or worry manifested. With these qualifications one has the proper energy to work, in other words, the individual enjoys life. Besides this, the normal standards of anatomy and physiology will be of value in determining any deviation from the normal, and a thorough blood and physical examination will show the resistance of the body to disease.

The commonest factors in undermining the health are chronic diseases and chronic focal infection, particularly infection with pyogenic organisms. These reduce the vitality and resistance to acute or intercurrent diseases. Of course it is recognized that immoderate or excessive use of stimulants, such as alcohol, and overeating and overwork contribute a great deal in lowering the vitality and resistance of the body.

Body resistance may be measured amperically by the standard of 100. Focal infection may also be amperically measured as to its ability to reduce body resistance. There is perhaps no one who may boast of a condition of body resistance of 100, and indeed this may not be necessary in order to possess perfect health. If, however, the resistance goes below, say, one-half, there will undoubtedly be manifested symptoms of disease.

IMMUNITY

According to Vaughan, immunity to any infection is due to the inability of the infecting agent to grow in the animal body. Immunity may be normal or acquired.

This immunity is not common, in fact it is absent, in the cases of most chronic focal infection, and only the best of attention to all the functions of the body, the use of bacterins or vaccines and other dietetic medical and hygienic measures may prevent acute outbreaks. It is plain, therefore, that chronic focal infections must be completely eradicated in order to obtain a cure, or to prevent the occurrence of acute or intercurrent disease. Some focal points of infection are spoken of by Billings as embolic and these, he says, cannot be reached very well by vaccines. In some locations where these embolic processes are located I believe that in addition to vaccines one may employ Bier's hyperemia; this would have a tendency to bring more blood to the parts, such blood being loaded with the introduced vaccines.

ORGANISMS

The various organisms that are most frequently concerned in the causation of chronic focal infection are mixtures of the following: The staphylococci and streptococci of various forms, pneumococcus, *Bacillus coli communis* and *B. tuberculosis.*

Syphilis, sarcoma, carcinoma and other diseases manifest at times symptoms of chronic focal infection; in such case, secondary infections of bacterial type are present.

These organisms may with a few exceptions be located in any one of the above-mentioned locations and in several at the same time. There may be a variety of organisms in the different locations and a mixture in any one of them; for example, there may be a chronic focal infection of staphylococcus and streptococcus in the tonsils, a pneumococcus infection in the gall-bladder and a *B. coli* infection in the appendix.

The toxins, however, as was shown by Vaughan, are of the same deleterious action, no matter from what organism they emanate; he calls them the protein poisons. The study of the protein poisons, toxins and anaphylatoxin are essential in the management of chronic focal infection but can not be discussed in this paper. The recent experiments by Dick and Bur-

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

meister on the injection of triturated tonsillar tissue into animals are very interesting and may prove of marked practical value.

GENERAL DIAGNOSIS

As mentioned before, a patient with a chronic focal infection may manifest no other symptoms than a general inability to do good work, expressed as "not feeling well;" such an individual is subject to frequent acute attacks of rhinitis, pharyngitis, laryngitis, tracheitis, bronchitis, and tonsillitis with all the possible local as well as general complications. The accessory sinuses, middle ear and mastoid, the lungs, gastro-intestinal tract, lymph-glands and blood with the typical rheumatic affections are some of the commoner sequels well known to every one.

LOCAL DIAGNOSIS

The finding of the focal point by the presence of the pus, be it ever so minute in amount, is most important.

The Mouth.—The teeth should be examined by a competent dentist and death of the pulp, apical infections, carious cavities of teeth with alveolar necrosis and fistulas are among the commonest forms of disease, and pyorrhea alveolaris is looked on as a specific cause of focal infection. It is imperative to employ the Roentgen ray in diagnosis of some of the hidden conditions of the alveolar process. A markedly coated tongue and a diffused chronic stomatitis are not infrequently found with markedly diseased teeth in persons with no knowledge of oral hygiene. In these cases, one will frequently find a chronic infection of the salivary glands with markedly altered salivary secretion. Forcing some saliva out of Steno's duct will demonstrate many pus microbes.

The Nose.—Every one is familiar with the method of detection of pus from the sinuses by nasal examination, and suction, and roentgenograms are important additional diagnostic measures.

The Throat.—The nasopharynx in which the adenoids are located and which are subject to retentions of purulent secretions within their folds and pockets can be examined by the Hayes pharyngoscope, Gargai's direct method by the Brunnunges handle and spatula, Holmes' nasopharyngoscope, and postnasal mirrors, but I have been employing a direct method of exposing the postnasal space by means of a rubber catheter. Focal infections in the tonsils can very easily be diagnosed by pressure against the anterior pillar of the fauces, when either liquid pus or caseous masses will be expressed. Tenderness and redness are additional factors. The size of the tonsil has nothing particularly to do with the amount of infection that may be within it, and a small tonsil may be more injurious to the individual than a large one.

Of chronic focal infection of the larynx tuberculosis, secondary manifestations of syphilis and malignant growths may be mentioned, but these are not very *a propos* to the subject. There is, however, a form of chronic focal infection of the larynx, trachea and bronchi known as the chronic purulent tracheobronchitis of the aged, which produces a condition of chronic focal infection. Often such conditions of the larynx, trachea and bronchi are secondary to sinus infection, or foreign bodies of the bronchi.

The Ear.—There may be so little evidence of pus in a chronic suppuration of the ear as to be barely demonstrable, and yet the entire mastoid may be infected, causing chronic intoxication. The roentgenogram and suction will aid in the diagnosis.

The general physical examination with the aid of all the possible laboratory findings will conclude the diagnosis. One particular diagnostic feature I would like to mention is the opsonic index according to Wright; this has been very much neglected in the management of these conditions. Yet if one wishes to know the absolute resistance of the patient to a particular micro-organism that has been isolated from one of the focal points of infection, it will be found indispensable.

TREATMENT

Aside from the eradication of the focal point of infection one should employ aids that will increase body resistance.

Formula as to the degree of chronic focal infection:

From tonsils	20 per cent.
From gastro-intestinal tract	10 per cent.
From appendix	10 per cent.
From gall-bladder and several other recesses	10 per cent.
Total degree of infection	50 per cent.
Resistance	50 per cent.

Removal of the chronic tonsillar infection by complete tonsillectomy will leave only about 30 per cent. of chronic focal infection which, with the addition of autogenous vaccination and other medicinal hygienic and dietetic measures, will be rapidly eliminated by the increase of antibodies, and so establish nearly normal health and resistance.

I now come to the question: Why are the tonsils and adenoids most frequently mentioned as the source of chronic focal infection and why should they in preference to any other chronic focal infected point be attacked, unless that other focal point is more manifestly possible the cause of the general condition? It has been definitely proved by Weichselbaum, Groeber, Wood and many others that the tonsils and adenoid tissue in the Waldeyer ring has the greatest power of retaining infectious material and that the lymphatic distribution to and from these structures is very great. It has been further noted by every laryngologist, as well as by many general practitioners who have had considerable experience with removal of tonsils and adenoids, that marked gain in weight and general well-being, with disappearance of the local as well as the general condition in the majority of instances, follows such a procedure. In many instances of focal infections other than the tonsils and adenoids, as for example, chronic suppurative otitis media or chronic purulent sinusitis, the latter condition cleared up or markedly improved following removal of the tonsils and adenoids. Of course it must be borne in mind that if such pathologic conditions as necrosis of the bones and cholesteatoma are present that the removal of tonsils and adenoids will not effect a cure.

Not alone will a suppurative ear or nose condition often be cured by the removal of tonsils and adenoids, because that may be due to the removal of pathologic structures which would have extended by continuity, but a suppuration quite distant from the tonsils as, for instance in the bladder or uterus, will be markedly improved or cured. The essential point I wish to make in this paper is that by removing a definite focal point of chronic infection (tonsils) the resistance and healing power of the patient is given opportunity to recuperate, and the individual thus is enabled to destroy other focal points of chronic infection, and put the system in a condition to ward off acute

attacks. I called attention to this fact before this Section four years ago[1] in the following words:

I should like to present a theory as to the raising of the opsonic index of the blood to all infections when the tonsils are enucleated. If, for instance, there exists some pathologic condition of the body, near to or distant from the tonsils, which refuses to yield to the treatment applied to the said condition, if there exists merely a lack of healing power, due, most probably, to the constant absorption of toxic matter from the diseased tonsils, and if this toxic absorption is done away with by the complete enucleation of the tonsils and the pathologic condition heals, is it not reasonable to assume that the drain on the system has thus been stopped and the blood given a chance to become powerful enough to cure the disease in question because of the enucleation of the tonsil? For example, operation is performed several times for osteoperiostitis of the zygoma, but the tissues refuse to heal in spite of all treatment, medical as well as surgical. The tonsils, which are diseased, are enucleated and the disease of the zygoma promptly heals, while every other evidence of marked improvement in the general health is presented. We all recognize the increase in weight and improvement in general health, especially in children, after removal of the tonsils and adenoids.

This theory, moreover, applies not only to the tonsil but to other structures as well; for instance, a man has tuberculosis of the kidney, with an external fistula and a hip-joint tuberculosis; if the latter is arrested the patient gains in weight and strength and the fistula and tuberculous kidney promptly heal.

Such results as these are more than mere coincidences and, to my mind, can best be explained by this theory.

That is one reason why the chronic infected tonsils and adenoids should be removed. The second reason why they should be removed in preference to any other structure is because with properly carried out technic there is less danger and inconvenience to the patient, without losing or interfering with some functioning structure. In addition to removing the structures containing the focal point of infection, or evacuating the infected material, we also obtain the predominating organism or organisms in culture and make therefrom an autogenous vaccine or bacterin. Just as soon as the patient has completely recovered from the operation we employ this vaccine in the full dose and continue to do so for an indefinite but prolonged period. This is done to insure complete neutralization of the toxins or elimination of all the trouble.

CONCLUSION

In conclusion I wish to say that all those who believe that chronic focal infection is a hobby would do well to adopt it, rather than remain on the outside making unjust and severe criticism without really giving the subject a fair trial. I well remember a discussion at the Chicago session, in which I strongly advocated the complete enucleation of the tonsil on account of the possible cardiac complication from rheumatism, and one of the speakers stated that he saw no reason why all the tonsil must be removed because, as he put it, it was not cancerous. This same member is now one of the warmest advocates of the complete removal of the tonsil, and an enthusiast on the subject of chronic focal infection.

From my experience I am sure that I have done very little if any harm by the removal of tonsils and adenoids for this purpose and I am sure that I have done considerable good.

108 North State Street.

1. Beck, Joseph C.: Conditions Demanding Enucleation of the Faucial Tonsils, The Journal A. M. A., Oct. 29, 1910, p. 1523.

THE FAUCIAL TONSILS AS A GATEWAY TO GENERAL INFECTIONS *

NORTON L. WILSON, M.D.
ELIZABETH, N. J.

Attention is directed to this important subject, not because physicians are not familiar with it, but because they do not emphasize sufficiently the seriousness of tonsillar infections. It may seem like presumption on my part to present to this Section a paper on this subject on which so much has been written. If, however, we can prevent some child from going through a short life with a damaged heart or kidney or can curtail the many swollen joints and the intense pain which accompanies them, we have in a measure fulfilled our mission on earth.

There are many good general practitioners and, I may add, a few laryngologists, who have not yet realized that cases of so-called acute articular rheumatism, acute nephritis, acute endocarditis, pneumonia, appendicitis, orchitis and many other acute infections may be the result of acute cryptogenic infection of the tonsils. I do not wish, however, to convey the idea that the tonsils are the only source of infections. I have seen acute articular rheumatism and acute nephritis follow acute otitis media, and it is an established fact that typhoid fever enters through the lymphatics of the intestines, and severe toxemia may follow acute inflammation of the lymphatics of the pharynx and epipharynx.

In my opinion, however, the faucial tonsils are the most frequent sources of infection. There is abundant evidence in the literature to show that many general infections take place through the tonsils, pharynx and nasopharynx with its adenoid tissue, the peritonsillar tissue, the lymph-nodes and lymphatic tissue of the retropharynx, the lingual tonsils, the middle ear, the teeth, gums and urethra. The ring of Waldeyer is the most vulnerable part of the body and the faucial tonsils the most frequent seat of inflammatory attacks. In 1885 I read a paper before our county medical society calling attention to the close relationship between tonsillitis and rheumatism, but just what that relationship was was not definitely established at that time. It is now known that the streptococcus or other germs can enter the blood through the medium of the tonsils and attack the joints or heart or kidneys. The specialist is not active enough in spreading this belief, and when I say specialist I include the pediatrist, because he probably sees more of these cases than the laryngologist.

In 1910 Loeb[1] cited four cases, and said: "Acute nephritis results from acute tonsillitis far oftener than is generally believed."

In 1912 our former chairman, Dr. George E. Shambaugh,[2] said: "As regards the appearance of the faucial tonsil which is a focus for systemic infection, it is quite clear that the size of the tonsil is no index of the menace this structure may be to the individual."

With this statement I think we are all in accord.

In 1907, Dr. Philip K. Brown[3] gave a very wide range of diseases which may gain entrance into the

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Loeb, W. H.: Acute Nephritis Following Acute Tonsillitis, read before the American Laryngological, Rhinological and Otological Society, 1910.

2. Shambaugh, G. E.: Paper read before the American Laryngological Association, 1912.

3. Brown, P. K.: Remote Effects of Tonsillar Infection, The Journal A. M. A., June 15, 1907, p. 2024.

body through the tonsils; he mentioned pericarditis, myocarditis, endocarditis, arthritis, chorea, neuritis, pleurisy, tuberculosis, iritis, phlebitis, osteomyelitis, Hodgkin's disease and possibly certain forms of leukemia.

Dick and Burmeister,[4] speak of the toxicity of the human tonsils. They are of the opinion that such conditions as asthma, convulsions and even true epilepsy may be produced through the agency of the tonsils.

W. P. S. Branson,[5] gives us the result of an examination of a patient with Sydenham's chorea. His belief is that Sydenham's chorea and rheumatic fever are due to one and the same infecting agent, and he has shown that the commonest avenue of rheumatic infection is the tonsil and next to it the nose.

D. J. Davis,[6] reported the result of his observations of forty-two cases of chronic streptococcus arthritis; in all of these cases the source of infection was in diseased tonsils.

F. Theisen,[7] reports six cases of acute thyroiditis following tonsillitis.

Dr. Ben Witt Key,[8] speaks of absorption from tonsillar infection as a causative agent in phlyctenular conjunctivitis.

There have come under my care eight cases of infection which in my opinion had their origin in the tonsils.

CASE 1.—Nephritis. A young man, aged 18, had acute lacunar tonsillitis, ten years ago. Urine was normal. Three weeks after I first saw him it was noticed that his face and hands were edematous. Examination of the urine showed he had acute nephritis. The nephritis followed so closely on the tonsillitis it made me wonder if I had not been mistaken about the tonsillitis and had really had scarlet fever to deal with. There was no desquamation and no other cases of scarlatina in the house and I was forced to conclude that the nephritis was due to tonsillitis. He made a good recovery in five weeks.

CASE 2.—Rheumatism. A woman, aged about 30, consulted me for a sore throat. The follicles of the pharynx were found to be enlarged and red with the crypts of a moderate sized tonsil inflamed and filled with cheesy débris. She complained not only of sore throat, but of pains in the chest. A careful examination by most competent physicians showed the chest pains to be muscular. They were in my opinion due to infection from the tonsils. The removal of the tonsils was advised but the patient would not consent to operation. The crypts were cleaned out and painted. She consulted me several times each year for the same trouble. The method adopted gave her temporary relief as did sodium salicylate or aspirin. In 1908 she submitted to enucleation of the tonsils. From that time until the present she has not suffered from sore throat nor have her chest pains returned.

CASE 3.—Nephritis. In June, 1910, I was called by Dr. Grier to see a case of quinsy in a young man aged 22. The abscess was opened. The urine was examined and found to be normal. One week following, his eyelids were puffy and examination of the urine showed acute nephritis with albumin, casts and blood-cells. He made a good recovery in a month.

CASE 4.—Nephritis. In 1912 a young woman of 18 was treated by her family physician for acute tonsillitis. She had had several attacks of tonsillitis and wanted the tonsils removed. About ten days after the attack of tonsillitis, I arranged to remove the tonsils. When I arrived at the hospital I was told the urine was normal. She was etherized and one tonsil enucleated, when the house physician rushed into the operating-room and informed me there had been a mistake, the urine from this patient showed considerable albumin, casts and some blood-cells. The other tonsil was removed, she was put to bed in the hospital and kept on milk diet for two weeks; in five weeks all evidence of nephritis had disappeared, notwithstanding the fact that she had been thoroughly etherized.

CASE 5.—Rheumatism. A physician, aged 51, was attacked with a lacunar tonsillitis. Temperature did not go beyond 101; in fact, he kept about the office much of the time. In five days his right big toe-joint became red, swollen and painful and two physicians who saw him pronounced it gout. The urine was negative throughout the entire attack. After a week the toe-joint became normal. Three days after the joint became well, the left ankle became swollen, red and painful. The throat remained somewhat sore throughout the attack. The joint affection was then diagnosed by four physicians as a streptococcus infection from the tonsils. The tonsillar crypts were curetted and painted with a solution of iodin and phenol (carbolic acid). The ankle-joint became normal in a week's time. One week later the tonsils were enucleated, and a long chain streptococcus recovered from the crypts of the tonsils, notwithstanding the curetting and painting with iodin and phenol solution. In order to control hemorrhage he was given 40 grains of calcium lactate on Wednesday, 45 grains on Thursday and 20 grains on Friday morning, making a total of 105 grains. The tonsils were enucleated under local anesthesia Friday afternoon, and there was very little hemorrhage. His blood-clotting time before taking the calcium was seven minutes; Friday morning after he had taken 105 grains it was two minutes.

Just a word regarding the administration of calcium salts. We have proved conclusively by the aid of the Biffi-Brooks coagulometer that the normal blood-clotting time with this instrument is seven minutes in the adult. We have reduced the blood-clotting time to one minute after the administration of 120 grains of calcium lactate. It must be given in from 10 to 15-grain doses three times a day for three days before operation to decrease the blood-clotting time.

If a general anesthetic is given there may be just as much bleeding at the time of the operation as there would be without administration of the calcium, but the bleeding is much easier to control, and once controlled is not apt to recur. Slight pressure will plug up the end of the vessel and in this way the hemorrhage may be controlled.

Case 5 has almost its counterpart in that of another physician, but he still has his tonsils and it will be interesting to see which of the two doctors will enjoy the better health.

CASE 6.—Keratitis. Mr. B., student, Jan. 23, 1914, had a sharp attack of tonsillitis. The crypts contained the usual inflammatory exudate, but unfortunately no bacteriologic examination was made. One week later his right eye became sore and it was found he had a severe attack of central interstitial keratitis. He denied lues and a Wassermann examination was negative. I desire to call attention to this case as I have seen no similar report.

CASE 7.—Rheumatism. K. M., aged 18. Twelve years ago I removed this patient's tonsils after the manner of the operation at that time, which was not enucleation. He never had another attack of tonsillitis until this winter, when he had a severe one, which was soon followed by an affection in his right knee and right thumb. He never had rheumatism before. I enucleated the tonsillar stumps last April.

CASE 8.—Rheumatism. H. C. C., male, aged 18, has had several attacks of tonsillitis but never had rheumatism until last August, when one week after an attack of tonsillitis his ankle-joints became swollen and painful. He was taken to Mount Clemens for treatment. Last October a pair of buried tonsils were enucleated, since which time he has had neither tonsillitis nor rheumatism.

My associate, Dr. Keefe, reports to me four interesting cases of a similar nature, one of which was in

4. Dick and Burmeister: Jour. Inf. Dis., September, 1913.
5. Branson, W. P. S.: Brit. Med. Jour., Nov. 23, 1912.
6. Davis, D. J.: Chronic Streptococcus Arthritis, THE JOURNAL A. M. A., Sept. 6, 1913, p. 724.
7. Theisen, F.: Albany Med. Ann., 1913, xxxiv.
8. Key, B. W.: Ophth. Rec., June, 1914, p. 273.

a child 6 years old, who had double mastoiditis and pleurisy following an attack of tonsillitis.

Through the courtesy of my associate, Dr. Schlichter, I am able to report the following case:

Miss K. K., aged 25, a domestic, had an attack of lacunar tonsillitis, followed in one week by acute nephritis. She was sent to the hospital, March 7, at which time she had no heart lesion. The kidney lesion had almost subsided when, March 19, about eighteen days after she was first attacked with tonsillitis, she was stricken with acute septic endocarditis and died the next day.

We have abundant clinical evidence of infection from the tonsils, and it may be profitable to spend a few minutes reviewing the laboratory evidence.

Dr. MacLachlan of the University of Pittsburgh, in a histopathologic study of 350 pairs of tonsils, makes the following statement:

We have observed that when symptoms of acute tonsillitis are present there is always a pathologic basis as shown by ulceration of the lining of the crypt. We therefore feel that a similar lesion is present in the tonsillitis preceding rheumatism and as far as we know, this lesion differs in no way from that of acute lacunar tonsillitis. We regard the ulceration of the lining of the crypts as being the vulnerable point of entry of organisms from the mouth. It matters little apparently what bacteria have produced the lesion, for once the ulcer has formed, it is possible for any type of organism to gain access to the deeper tissues.

Such is the probable origin of acute rheumatic fever following tonsillitis. The tonsillitis is not rheumatic but pyogenic in origin and the development of rheumatism is in all probability due to an overwhelming invasion of the rheumatic infection the nature of which is not definitely known.

At the meeting of the Eastern section of the Triological Society held in New York during January, 1914, Dr. George B. Wood of Philadelphia demonstrated on the screen the presence of bacteria in the tonsil of the hog which had penetrated the cryptal epithelium into the interfollicular tissue.

The late Dr. LeFevre in discussing the paper was thoroughly in accord with the view that rheumatism is an infection which gains entrance into the body through the tonsil.

Dr. Wood in his article on tonsillar infection in the hog says:

The anthrax bacillus penetrates through the cryptal and not the surface epithelium. It probably always gains access to the parenchyma of the tonsil by passing through the living unaltered cryptal epithelium, and having gained access to the superficial layers of this epithelium, it tends to multiply in the deeper layers and thus pass into the interfollicular tissue.

The rapidity of the invasion is influenced both by the virulence of the organisms and by the susceptibility of the individual animal. In some of the sections examined the bacilli were found penetrating the blood-vessel walls and a few were seen in the blood-current.

From the laboratory and clinical studies we are forced to conclude that infection does take place through the tonsils.

410 Westminster Avenue.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BECK AND WILSON

Dr. George E. Shambaugh, Chicago: One of the most important contributions to medicine during the past decade has been the elucidation of this relation between focal infection and serious systemic diseases. The most important focus in the causation of chronic systemic infection, appears to be the faucial tonsils, which cause, as Dr. Beck has stated, more trouble than all the other foci together. The reason is not difficult to find. The faucial tonsils are more frequently the seat of severe, acute infection than is any other organ in the body. It is rare to find an adult who has not experienced one or more attacks of acute follicular tonsillitis. The tonsils with their deep pockets are admirably suited to retain latent foci of infection capable of causing the most serious systemic trouble. The etiologic relation between an attack of acute tonsillitis and one of rheumatism, nephritis or neuritis which immediately follows the acute infection, is easily recognized. Not all the cases in which this relation of cause and effect exist are so readily recognized. A patient recovers from the acute tonsillitis with latent unsuspected foci remaining in the tonsils, and only after the lapse of some months or even years, does the evidence of systemic infection appear. It is in the recognition of these chronic cases that the chief difficulty presents itself. In such cases an examination of the tonsils will often disclose such positive evidence of foci of infection as pockets of pus. In other cases no pus can be expressed from the tonsils but their congested edematous appearance indicates distinctly that they are the seat of inflammatory reaction. At other times the history of recurring attacks of tonsillitis in previous years leads one to suspect the tonsils as the possible focus for the systemic infection. Not infrequently no distinct evidence of infection in the faucial tonsils can be demonstrated, nor will the patient recall ever having had an attack of tonsillitis, and yet when the tonsils are removed abscesses of varying size will be disclosed in them. It is evident to all that in the proper handling of these cases of systemic focal infection it is of great importance that our work should cooperate with that of the internist, the dentist, etc. The specialist working in isolation is likely to overlook the tonsil as the possible cause of the trouble because he fails to detect palpable evidence of infection in it, or he may remove tonsils when other foci, which the internist would readily detect, are really causing the systemic trouble.

Dr. Robert Levy, Denver: Year after year the importance of the tonsils in relation to general infections is repeated in this Section. We ought to emphasize the importance of these facts to our friends in other branches of medicine. It is true some of our internists and pediatrists are awakening to the importance of this subject, but it is often astonishing how many there are who do not as yet realize it. The previous history of every case in which the patient is suffering from recurring attacks of tonsillitis is worthy of much consideration. Dr. Shambaugh states that previous attacks of tonsillitis pass out of the memory of the patients. Perhaps we must go back to the first attack in early childhood. In many cases the most careful investigation fails to reveal any previous attack of this affection, but on careful investigation we find that during childhood attacks of sore throat occurred which had been forgotten. In childhood we often find a history of attacks of indisposition with more or less fever and nondescript symptoms which were attributed to disordered stomach. No local affection of the throat was recognized. Very frequently one can determine that these attacks were really due to tonsillar infection and in our subsequent management of the case should be so considered.

Dr. George L. Richards, Fall River, Mass.: I agree with what Drs. Beck and Wilson have said concerning the danger of focal infection, but one point they have not referred to. Nearly every city now has school inspectors who examine the throats of children and, as a result of these examinations, we have a great many children brought to us, especially in the clinics, with the statement that "this child has enlarged tonsils," or "he has adenoids." All the history they bring is that the inspector has said that they have enlarged tonsils or adenoids. The child complains of nothing, but the inspector says he has enlarged tonsils. Now, shall we take out all these tonsils or shall we wait for definite symptoms? We are still about as much in the dark with regard to the physiology of the tonsil as we ever were. If we say that these patients don't need to be operated on, we find later that some other doctor has done the operation. I call attention to the

fact, based on a chance to observe a great many children whose tonsils have not been taken out but from whom the adenoids have been removed, that these children are frequently brought back for a tonsil operation. Often after tonsils are removed there is a reproduction of granulation or follicular tissue along the posterior pillar and sometimes between the pillars, as though nature endeavored to protect herself in some way with this new tissue.

DR. OTTO T. FREER, Chicago: The list of diseases serving as an excuse for tonsillectomy has been growing at an astonishing rate and such ailments as muscular rheumatism, neuritis, palpitation, goiter, chronic Bright's disease, laryngitis, nervous cough and vasomotor rhinitis have been included as unquestioned proof of some supposed but not evident focus in the tonsils. In fact the path of sound pathologic research has been left for vague speculation, based, as such speculation usually is, on some truth. The view that chronic tonsillar focal infection is frequent is not in accord with common clinical experience which, while it long ago recognized the tonsils as a source of such acute systemic infections as articular rheumatism, nephritis, endocarditis, pyemia, etc., is supposed in the long ages to have overlooked what the investigators have claimed to be so obvious, chronic focal infection. This overlooking, concerning what is asserted to be a sequence of great frequency, seems incredible considering how carefully etiology has always been studied, and the sequence, that many grave and obstinate diseases depend on a mysterious tonsillar focus which does not even locally indicate its presence, is not in harmony with the daily experience of laryngologists to whom most of the diseased tonsils with obvious foci come, not as causes of systemic disease, but on account of the local inflammations caused by them, for the patients bearing these tonsils are not rheumatic nor do they seem to be afflicted with more chronic ailments than other people. On the focal-infection theory we should, at least, have many rheumatic cripples coming to us, while the fact is that in the intervals between attacks of tonsillitis or peritonsillitis our tonsil patients are quite well. Many apparently normal tonsils, in patients with chronic ailments, are removed as sources of infection without improvement of the patient's condition and should have been left untouched.

DR. W. W. CARTER, New York: I treated a little girl four years ago who had an acute tonsillitis and on examination I found that she had chronic endocarditis. Two days later she had an acute attack of endocarditis and I ascertained on getting a fuller history of the case, that she had had three or four attacks of tonsillitis. When she had recovered from this attack I tried to get permission to remove her tonsils but the parents objected on the ground that she had heart trouble. I saw that child in three subsequent attacks of tonsillitis and in from twenty-four to forty-eight hours after the beginning of each attack she had an acute endocarditis. About two years after I first saw her she died. As has been said, the size of the tonsil has nothing to do with the question. The dangerous tonsil is the submerged one and the one that has had several previous infections. Pathologic changes have occurred in the crypts, drainage is interfered with, and then we get absorption. We must conclude from our clinical experience that the tonsil is the real source of most of our focal infections and that, therefore, we must remove the tonsil. At present that is the only solution of the problem, unless there is some other obvious source of the infection. I wish to emphasize the fact that we seldom have focal infection following the first attack of tonsillitis. It is only after several attacks when these pathologic changes have occurred in the crypts that we get the general infections.

DR. JOHN F. BARNHILL, Indianapolis: The whole question is one of diagnosis, and physicians who practice laryngology ought to be as careful here in the matter of accurate diagnosis as in other branches of medicine. That it is wrong to remove the tonsils in every case is not questioned. Dr. Beck's paper brought out much that ought to be included in every history sheet. It is wrong, in a large majority of cases, to remove tonsils until one has gone into all the points concerning focal infection. Our history sheets should ask questions concerning rheumatism, nephritis, arthritis, heart-disease, etc.; and may show that the general infection has been entirely due to some other cause than the tonsils. There can be no question, however, concerning the correctness of Dr. Wilson's contentions. There are such cases as he speaks of and we should be more active in removing such tonsils. We should be better teachers in what concerns the public welfare. It has been alleged here that the general practitioner has been slow in appreciating these things. My own experience is that they have often been quicker than we have. The first cases I ever saw and had clearly brought to my attention, of focal infection due to the tonsils, were brought to my notice by a general practitioner. A certain professor had been so ill with heart-disease for a long time that he could not carry on his work. He came into the hands of Dr. Osler who went over him again and again and finally said, "Your tonsils are the cause of all your trouble." He advised that the patient be operated on thoroughly but the tonsils were only clipped. The illness continued over a period of two years. Osler had gone abroad and the patient came into the hands of Dr. Janeway, who after careful examination told him the same thing. Then the patient's tonsils were completely enucleated and ever since, or until his death from pneumonia some time ago, this patient remained well. Another instance was that of a child, very ill with endocarditis, following an acute tonsillitis. The family physician requested me to examine the tonsils. I did not see much there but on the insistence of the physician, the tonsils were removed, and to my surprise, in one of them a deep abscess existed containing a teaspoonful of fluid pus, which evidently had been there since the acute attack of tonsillitis two years previously.

DR. DENNIS J. MCDONALD, New York: The important thing is, as Dr. Barnhill said, the question of diagnosis. We should know what tonsils to remove. As to the question of school inspectors, considered from an economic point of view, it is well worth the tax payer's money to have these matters taken up in a proper systematic way, and the important thing is to have proper inspection and to know what cases are to be operated on. This Section ought to draw up a memorial advising that all cities of 50,000 or over should have one or more specialists make a proper survey of the situation. In larger cities the committee should consist of four physicians; two nose and throat specialists, one pediatrist and one orthopedist. In this way we could arrive at some proper working knowledge.

DR. THOMAS E. CARMODY, Denver: Dr. Wilson gives credit to calcium lactate when, possibly, it should not be credited. I have taken the coagulation time in a number of cases and for some reason or other was unable to operate at the time planned, and a few days later found coagulation time to be from one to two minutes longer or shorter. The normal time of coagulation with the Boggs instrument, which I use, is four minutes, but there may be variations in the same person. With regard to focal infection it begins in the tonsils often because the tonsillar crypts cannot empty themselves on account of lack of muscular fiber in the tonsils, or hypertrophy of muscular tissue in the pillars covering the tonsils. We have examined about one hundred tonsils and found various conditions. We find in a number a lack of epithelium and infection can so gain access. The probabilities are that we never get infection through the intact epithelium. Another reason why the crypts become filled with secretion is because of loss of this epithelium. The secretions cling to the surface devoid of epithelium in the crypts, like scabs on the surface of the body, or on the walls of the nasal cavity. It was stated that these children do not complain of throat symptoms. I have seen a number of cases in which, on examination, the patients were found to have tonsillitis although nothing could be learned on questioning the child.

DR. STANTON A. FRIEDBERG, Chicago: I have been associated with Dr. Shambaugh in a good deal of the same kind of work he mentioned and can endorse what he said with regard to focal infections. One criticism has been offered concerning the results of treatment. In the chronic arthritic cases I think it is sufficient if we are able to limit the process

of the infection. We cannot expect a loosening up of the joints to a normal state. In these patients, some of them 60 years or more of age, if we can limit the progress of the disease we have accomplished a great deal. One point that has not been brought out is the possibility that the ear may be the seat of focal infection. Dr. Borden, a year ago, presented this theory. At a meeting of the Laryngological, Otological and Rhinological Society he cited a number of cases of nephritis in conjunction with otitis media, in which after the mastoid operation had been performed, there was a rapid clearing up of the nephritic condition. I have had the same experience.

Dr. Emil Mayer, New York: One condition that we frequently encounter in our patients and that has not been mentioned here, perhaps because we have been speaking of more serious complications, endocarditis, nephritis and things of that sort, is that patients will come with a complaint, that for want of a better name they call a rheumatic condition of the throat—a feeling of fulness and soreness. In these cases I have been able to express, by means of compressed air, some decayed material from the crypts which has caused this trouble. It is not a bad suggestion to treat some of these cases in that way. While I have not seen Dr. Wilson's bibliography, I called attention to these focal infections a considerable while ago. We have all spoken of the good results from our tonsillectomies, but what about the bad results, about the cicatricial conditions after bad operations? If we want to teach the general practitioner to appreciate our work, we must be sure that our work is good. If not, you will see what I have seen, cicatricial tissue in the postpharyngeal wall, an appearance as though there has been a syphilitic process.

Dr. W. E. Dixon, Oklahoma City: History tells us that Celsus in the year 10 A.D. advocated the removal of tonsils. Celsus didn't say why, but he used the same method that Dr. Richards employs, removing them with the finger, and he did not stop there, but adopted Ballinger's method, with the scalpel. As to the matter of making a diagnosis of tonsillar infection, do we know that the removal of diseased tonsils is going to stop the rheumatism when we know that there are other sources of infection, as the accessory nasal sinuses? If these are not looked after, we may still have a continuance of the infection after removal of the tonsils.

Dr. A. I. Weil, New Orleans: The matter of further education of the profession and of the laity is one which is well worth considering. Patients have come to us not through their own physicians, but independently, and the poorer classes come in the clinics. Even the negroes will say "This child has tonsils and adenoids," and if you refuse to operate they are disappointed and go elsewhere. They have learned that these things are the cause of innumerable troubles. Many of these tonsils are normal and require no interference, but it is difficult to tell always which tonsil is causing infection. That is well illustrated by a case in my own family; a child of 4 or 5 years who had been subject to such indispositions, as have been referred to by Dr. Levy—periodic attacks of fever and mild illness, the tonsils apparently perfectly normal; no previous attacks of tonsillitis; some enlarged glands in the neck. I got the reluctant consent of the parents to remove the tonsils and after they were removed these periodic attacks of mild illness disappeared. The child has taken on weight and is apparently much improved, although the tonsils were apparently normal. I had my attention called to the toxicity of these infections some years ago when doing work on tuberculosis of the tonsils. In the course of my work it was my practice to inject titrates of tonsils into guinea-pigs and it was surprising how promptly they died from general infection. These tonsils were loaded with organisms of all kinds.

Dr. E. B. Gleason, Philadelphia: In connection with Dr. Wilson's paper, it would be interesting to inquire what are the more common sources of infection of the tonsils themselves? When we remember how frequently alveolar abscesses occur, our attention is directed to them as a source of tonsil infection. A case in point will show how important this matter is; a gentleman between 50 and 60 years of age, with perfectly normal tonsils, for some years had recurrent tenderness of the right first and second molars of his lower jaw. The last attack commenced with tenderness in these teeth, then the tonsil on the same side became infected; he had a temperature of 102 or 103 F.; the other tonsil became infected and later a purulent rhinitis started up. Culture of the secretions from the nose showed a nearly pure culture of *Streptococcus brevis*. The extraction of the teeth brought about an abrupt cessation of the attack. The roots of both teeth below the gums were carious and the alveolar abscess swarmed with streptococci. Before attacking the tonsils it would be a good plan, in the majority of cases, carefully to examine the nose, accessory sinuses, and more especially the condition of the jaws, because latent foci of pus in the jaw is much more common than in the tonsils. If patients with acute articular rheumatism in our hospitals are questioned, some curious phenomena will be noted. Very few of them have had previous attacks of tonsillitis. I remember a number of patients that I questioned in this way in the Medico-Chirurgical Hospital and some of them had had recurrent attacks of tonsillitis when they were young, none of which were followed by rheumatism. After these attacks of recurrent peritonsillar abscess ceased to occur and the tonsils became normal, the attacks of acute articular rheumatism occurred, and were evidently from some other source than the tonsils. The tonsils are usually swollen during the time the 6 and 12-year molars are erupting and sometimes during the "cutting" of other teeth.

Dr. Hudson Makuen, Philadelphia: No one will deny the theory of focal infection, and few of us will question that the tonsil is one of the sources of systematic infection, but is there not a possible danger in the frequent reiteration of this fact? The tonsil operation, in my opinion, is already too popular. I should not be surprised if some of us have done the operation for the simple reason given by Dr. Richards, namely, that "if we didn't do it some other fellow would." Another thing that makes the operation too popular is the teaching that the removal of the tonsil does no harm. Now the removal of the tonsil may and sometimes does do harm. In a recent paper on the subject, I made the statement that an extracapsular tonsillectomized pharynx is always a damaged pharynx, and I believe this to be a demonstrable fact. I think we ought to insist on a fuller investigation of the conditions before we operate. We should try to be sure in every case whether or not the tonsil happens to be the cause of the infection, and if it is, let us remove it and if it is necessary to do an extracapsular operation, let us do that, but remember that is is possible, in many cases, to remove the source of infection without doing this radical operation.

Dr. Harold Hays, New York: It seems to be really a question as to whether or not the tonsil is responsible for every acute infection that the body is heir to. The same thing has been said of the appendix. In the New York Eye and Ear Infirmary in the last five years something like five thousand tonsillectomies have been done. They are removed to prevent infection. Many of these children that are suffering from malnutrition are found to have some focal infection as the cause. I think a great many of these cases in children who do not develop properly are due, not to infection from the tonsils, but to obstruction or chronic irritation of the throat. In many patients we find no evidence of tonsillar trouble. In a few weeks the patient has acute rheumatism. He doesn't return to us and we cannot say whether or not the tonsil is infected, but, in the majority of cases of acute articular rheumatism, I believe we would find that very few of the patients have had acute tonsillitis. Of course there is no doubt that patients with nephritis or rheumatism may have enlarged tonsils. It is important to consider that there are possibly some other sources by which infection may get into the system. A great deal of this work has been done as a result of having cases sent to us for more or less promiscuous reasons. The majority of us are looking for trouble in the throat. A great many tonsils are removed perhaps without doing any harm but also without doing any good.

DR. C. E. COOPER, Denver: In connection with the question of diagnosis and operation, I have found it helpful to ascertain whether or not the tonsil is infected. If a needle is plunged into the deep tonsillar structure and a sufficient number of small punctures are made, enough fluid and blood for examination will exude. A culture made from this will give the bacterial flora of the substance of the tonsil. If it is a streptococcic infection, it is an indication for operation. I have seen several cases of acute and chronic nephritis associated with infected tonsils and consider it an indication rather than a contra-indication for operation.

DR. RUFUS B. SCARLETT, Trenton, N. J.: The trend of the discussion seems to be toward the tonsils as a source of general infection. No doubt at present dentistry is being better done than it was ten or fifteen years ago when decayed teeth, as a rule, were not filled to the roots as they are to-day. Some of these teeth filled in this incomplete way are now causing trouble through the pulps infected at the time of the decay. I speak of this because during the past year I sought information as to the cause of an infection and consulted the best men I could find. Only recently a roentgenogram located an abscess at the root of a tooth. Very often a systemic infection may be attributed to the tonsils by a process of elimination when it may really be due to a pocket of pus at the root of a tooth.

DR. BURT R. SHURLY, Detroit: One point we have as yet not mentioned. Those of us who have practiced internal medicine know how frequently in cardiac disease two or more murmurs may be heard in the heart, and often, as we narrow down and become more and more concentrated in one line, we fail to look further after finding one explanation for a trouble, one particular focus of infection. If we find it in the tonsil we are satisfied and look no further. It would be unfortunate not to emphasize this fact. Internists are not satisfied with diagnosing one cardiac murmur when there may be more, and we should constantly bear in mind that there are frequently two or more locations for our focal infections. If we happen to be the first to investigate the case, we must consider this possibility, and if necessary have the internist aid us in our search.

DR. JOHN J. SULLIVAN, Scranton, Pa.: We are having a dress reform, a religious reform, and a half dozen other reforms all over the country and I suppose now we must have a tonsil reform. It is simply a matter of more accurate diagnosis whether or not the tonsils shall be removed.

DR. JOSEPH C. BECK, Chicago: Concerning Dr. Freer's remarks with regard to exophthalmic goiter as caused by infection from the tonsils, he can find plenty of evidence that this is so; not directly from the tonsils to the thyroid, but due to changes in the glands of internal secretion brought about by toxicity. The tonsil is a frequent cause of that toxicity and hence is the most important structure for us to study in that connection, not that there are not other foci too. By removing a certain percentage of chronic focal infections, we enable nature to take care of and eradicate the other foci.

DR. NORTON L. WILSON, Elizabeth, N. J.: Every time I have tonsils to remove I ask for what reason they are to be removed. I, too, have had cases sent in by the school inspectors but would not remove the tonsils without some specific reason. I took it for granted that every throat surgeon was possessed of a certain amount of common sense and such a man doesn't remove every tonsil he sees any more than an abdominal surgeon would remove every appendix that comes his way. With regard to the remark that the coagulation time is four minutes, I stated that the normal coagulation time with the particular instrument I used was seven minutes. Of course, each variety of instrument has its own clotting time.

Empiricism.—Empiricism assumes the existence of a fact even though it cannot be traced to any known law of wide application. Every general synthesis which is not fully established, must, at least provisionally, be characterized as empirical.—Lugaro, Problems in Psychiatry.

THE PRESENT TEACHING OF PSYCHIATRY IN AMERICAN MEDICAL SCHOOLS*

ROSS MOORE, A.B., M.D.
Assistant Professor of Nervous and Mental Diseases, Los Angeles Department of Medicine, University of California
LOS ANGELES

In order that Dr. Singer's paper might receive the best possible consideration and discussion in this symposium, it seemed wise that present conditions in the departments of psychiatry of our American medical schools should be presented to you to-day.

To that end I sent out the following questions to seventy of the Class A+, Class A and Class B schools:

1. How many hours are given to the teaching of psychiatry in your school?
2. How many hours would you like to have for it?
3. Does your course correlate psychology with psychiatry in a definite manner?
4. What faults have you noted in present teaching methods?
5. Outline your ideal course in psychiatry.

About forty replies were received. In character they ranged from uninterested, categorical and monosyllabic answers, to four-page letters written at the cost of time and much thought.

On the whole, they showed that the majority of the men teaching this subject are entirely dissatisfied with the situation.

A calculation based on all the answers to Question 1 shows that American medical schools average 33.4 hours of combined clinical and didactic work in psychiatry. Leaving out two schools, one of which gives 140 and the other 69 hours to the subject, I find that the average is but 28.6 hours. This includes not only the psychiatry but also the psychology which is given in a number of institutions.

In examining the answers received to Question 2, "How many hours would you like to have?" the average is found to be 50.3. Again leaving out the two schools having a very high number of allotted hours, the average is found to be 40.7. The desired increase is 33 per cent. in the former calculation and 49 per cent. in the latter. In other words, the consensus of opinion is that American medical schools give from one-third to one-half less time to this subject than is proper and right.

Several Class A+ schools have a course well thought out and balanced. Indiana University leads all other American medical schools in number of hours given to the subject. In analyzing the course in this institution the impression is obtained that it is more a collection of a number of isolated series of lectures and clinics than a well-thought-out whole. The dean intimated to me in his letter that it was rather a haphazard growth than a constructed course.

At the other end of the list of A+ schools is found Western Reserve University, my own alma mater, whose psychiatrist wrote me with immense disgust that the faculty would allow him no definite hours whatever for the teaching of mental diseases, but that he had succeeded in getting twenty-five for this work in spite of the snub of the curriculum committee.

The smallest number of hours given to the subject is at Tulane University, where there are but eight.

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

The answers to my third question, "Does your course correlate psychology with psychiatry in any definite manner?" were most varied. Some were categorical and some explanatory, while the question was left unanswered by many. I should say that a number of those writing these answers did not realize what I meant by the question. Twelve were answered, "No." One said that psychiatry was correlated with brain physiology in his course. Another made the statement that his course did not correlate with college psychology because there would be nothing gained by so doing. Another answered "No," and gave as a reason that psychology is a preparatory study. Many men said that they made attempts to do this in the first few lectures of the course. A number of those who said, "No" intimated that the time is too short to take up psychology even though it is introductory to psychiatry. A very interesting fact noted in this connection is that a number of the teachers who are most handicaped by short hours are most alive to the need of a proper correlation between psychology and psychiatry. Several said that this correlation is to be done thoroughly in the near future in their institutions.

On the whole, the answers to this question seem to indicate that a good many men are doing quite a lot of thinking about teaching this relationship between the mind in its normal and its pathologic state. On the other hand, these answers show that there is still a definite percentage of teachers of psychiatry who are inclined to adhere to the old way of giving set lectures and descriptions of terminal or chronic mental diseases to the exclusion of the borderline states and preinsane conditions. Or, putting it another way, the department of psychiatry in a good number of American medical schools is still being conducted on the "lecture and run" principle which characterized most of the teaching work in medical schools of twenty-five years ago.

My fourth question was, "What faults have you noted in the present teaching methods?" That question certainly stirred up the animals. Some men wrote pages on it. Almost everybody had a grievance. The conservatives found fault with the radicals for trying to make every medical graduate an expert psychiatrist. The radicals intimated that the general trend of all modern thought makes it obligatory on medical schools to raise psychiatry to the dignity of a major subject. From Detroit College of Medicine comes the statement that "much of the teaching of psychiatry is too speculative for average students to understand." This is but another way of saying that psychology and psychiatry are too poorly correlated in our courses. In fact, most of the faults pointed out in these replies clustered about this matter of inadequate correlation and preparation for the study of psychiatry, and the second fact that clinical facilities for teaching a working knowledge of mental disease other than that found in asylums is almost entirely lacking. Many men showed their impatience at having to confine their clinical demonstrations to old, fully-developed psychoses. The feeling was that students get wrong ideas thereby.

To my request for an ideal outline for the psychiatric course came many earnest and thoughtful replies. The University of Pennsylvania sent this succinct statement:

The ideal course is one that will teach the average man how to get a sane opinion of mental disease.

The University of Virginia sent this rather original outline:

1. A review of the fundamental principles of modern psychology.
2. An exposition of gradual defections from normal mentality.
3. Neuropsychoses.
4. Psychoses.
5. Demonstration of typical and atypical cases.
6. Asylum service.

Cornell University Medical School says:

The ideal course is one that will teach more thoroughly those diseases which are amenable to therapeutics.

To sum it all up, I may say that American teachers of psychiatry demand an increase of from 33 to 50 per cent. in time allotted to this subject by curriculum committees. The subject is so irregularly taught that while one Class A+ school is found to be giving 179 hours to it, another is found to schedule no hours at all. The chief fault with the present course is the almost universal lack of a psychiatric clinic where other than asylum cases can be studied.

705 Fay Building.

THE IDEAL COURSE IN PSYCHIATRY FOR MEDICAL SCHOOLS *

H. DOUGLAS SINGER, M.D., M.R.C.P.
Director of the Illinois State Psychopathic Institute
KANKAKEE, ILL.

Probably the greatest modern advance which has been made by the medical profession is the realization that the physician's duties are not limited to the treatment of disease. The older system of teaching was concerned only with the particular remedies to be applied under any given condition. To-day the problems of etiology and prevention are steadily becoming more prominent and the blind symptomatic administration of drugs and other remedies is slowly disappearing. Psychiatry has been one of the most neglected branches of medicine and even to-day the vast majority of graduates are not only ignorant of, but are indifferent to, this subject. It may not be unwise, therefore, briefly to mention some of the reasons which render the teaching of psychiatry essential in the training of a physician.

It is true that the treatment of the disorders grouped under this heading is a special subject carried out almost entirely in special institutions and hence enters but little into the province of the general practitioner. But the original recognition of the need for such treatment must be his duty. To fulfil this he must be able to recognize evidences of mental disorder even before they become obvious to the ordinary layman. If he is to carry out the higher ideals of prevention he must furthermore know something of etiology and be able to grasp and to heed the warning signals before the outbreak of the disorder. Here as in other branches of medicine prevention is paramount and the problems of etiology come first. When it is realized that at least one in three hundred of the total population becomes certifiably insane the magnitude of even this question is obvious.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

But there are certain further points which need especial emphasis. The one feature which characterizes man as the highest type of living organism is his adaptability. This adaptation is rendered possible by the complexity of his nervous system through which the various effector organs are regulated and rendered more flexible. It then necessarily follows that in order reasonably to understand and rationally to treat disorders and disease of the body generally it is absolutely essential that the physician have some knowledge of these coordinating mechanisms. It would be impossible even to guess at the proportion of the cases treated by the general practitioner and specialist in every branch of medicine which depend on some failure in nervous control, including therein the activities of the highest (conscious) activities of the brain. It is only necessary to mention the recognized neuroses of organs, as they are called, and the cases of nervousness, chronic constipation, indigestion, insomnia, etc., to demonstrate their wide extent. The study of psychiatry is the study of Nature's experiments with these mechanisms from which, to a very large extent, our knowledge concerning them has been acquired.

The teaching of psychiatry is, therefore, not of special but of fundamental and general interest, and the particular directions in which it should be pushed are those which throw light on (1) the highest cerebral mechanisms and the adjustments they subserve, that is, psychology, and (2) the etiology of disorders in this sphere.

To what extent the present system falls short of these ideals should be obvious from the results achieved. But before entering on the question of a more ideal method it would be well to discuss briefly the reasons for this failure in order to lay the foundation for the recommendations to be made.

The main factor, as it appears to me, is the struggle between the older dualist hypotheses of "mind and body" and the present-day violent reaction to them which is fully as unreasonable and harmful.

It may at once be conceded that the older psychology is of little practical value for the reason that it has been mainly restricted to a study of consciousness and has given but little heed to the biologic purpose or dynamics of the mechanisms involved. Consciousness has thus been regarded as the master instead of the servant. Because reactions to given situations are selected with the aid of conscious mechanisms it has been tacitly assumed that there is a directing and guiding "mind" or "will" acting under separate and individual laws which are not only different from those governing the activities of the lower levels in the hierarchy of the nervous system but are even more or less autonomous and unintelligible. In the most recent text-book of Kraepelin, for instance, we still read of "independent disorder of the will." There naturally follows from such views a wealth of more or less fantastic and mystical dogmatism concerning "the influence of mind over body" and of body on mind which has resulted in a wholesale condemnation by many of everything psychologic. While we still hear of "mental disease," a term which can mean nothing but disease of a hypothetic entity, mind, yet any attempt at a psychologic explanation of the phenomena of "insanity" arouses a storm of protest and ridicule. The present-day teaching that all mental disorder is a result of disease or intoxication of the brain must, in spite of the severe materialism on which its exponents pride themselves, by this very attitude of negation tend to emphasize and maintain a line of separation between "physical" and "mental." It would be as reasonable to assert that because one man is a Republican and another a Democrat that one or other of them must be suffering from a disease or intoxication of his brain as to insist that those conclusions reached and adjustments made which we call delusions and disorders of conduct are necessarily evidence of such.

The almost universal custom in teaching psychiatry to-day is to adopt some one of the numerous systems of classification and then to retail for each named type a symptomatology by which it may be recognized and a "differential diagnosis" achieved. It is true that, with the progress of time, dividing lines have been drawn which establish more or less clearly certain differences in course, but even these are frequently somewhat doubtful and conflicting. There can be but little claim, however, to the establishment of definite disease-entities.

The reason for this anomalous state of affairs is not far to seek. The situation is much that which existed and still, to some extent, exists in neurology and internal medicine. *The mental picture is not a disease but only a symptom* of disease or inadequacy in construction not only of the brain but of the various organs of the body. Just as hemiplegia is only a symptom, so the disorder of thought and conduct which is called "insanity" is only a symptom and not a disease. The conscious activities of the paretic which lead to the recognition of his "insanity" are no more than a symptom of the disease process in his brain and bodily organs generally exactly comparable to the disturbance of reflex, the albuminuria and the cardiovascular irregularities. It is true that this disease process results in the destruction of nerve pathways with consequent loss of associative connections evidenced by loss of memories, poverty of ideas, euphoria, etc. But it is also true that the picture varies within the widest limits, and one often hears it stated that paresis may present "symptoms" of any one of the named psychoses. The patient may be happy, depressed, paranoic, catatonic, etc., and for these facts no kind of explanation is offered to the student. Such a point of view might be permitted for definite structural diseases of this type wherein the symptomatic nature of the picture as a whole is clear; but when similar manifestations are presented again as separate disease-entities, hypothetic intoxications, etc., each with a set of "symptoms" of its own (symptoms of a symptom), it is small wonder that the utmost confusion and disrespect for the subject prevails in the mind of the pupil. He is almost forced to the conclusion that a particular kind of disease and a special poison cause the secretion of a particular kind of delusion and a special kind of conduct much as a particular kind of disease in the kidney results in the secretion of a particular kind of cast in the urine.

Let us now turn to a consideration of those points of view which permit of a reasonable method of teaching and study. All psychoses present certain peculiarities of thought and conduct, and the problem to be solved is the determination of the manner in which this person reaches the conclusions which these peculiarities represent. In order to start out on this question it is obviously first of all necessary to have some knowledge of the rules governing the operation of these mechanisms. In other words, it is necessary to study physiology and especially the physiology of the associative mechanisms of the brain, which is

nothing more nor less than psychology—not the older psychology which has been condemned above but the more modern aspect which considers these nerve activities as a means of adaptation. It is not a question of studying the conscious state, as such, but of observing the manner of meeting existing situations rendered possible by the conscious mechanisms available.

The best introduction to this study with which I am familiar is "The Integrative Action of the Nervous System," by Sherrington. Here is shown in the most lucid and instructive manner the meaning of adaptation and of the selection of an appropriate response to a given stimulus, all entirely apart from any question of conscious choosing. The reactions which occur are highly complex but at the same time accurately arranged for the accomplishment of a definite purpose, this being the conversion of the stimulus to the welfare of the organism. There are illustrated combined activities of the whole musculature of the body into a picture apparently expressing emotion, although no conscious feeling can possibly be present. The laws governing the selection of reactions are admirably elucidated and can be applied equally well to the solution of this same question where conscious mechanisms are in operation.

From this as a starting point it becomes easy to grasp the real relation between the conscious feelings called moods, affects and attentive interest on the one hand, and the condition of the body as a whole on the other. It is not a question of reacting to situations in a certain manner because we feel this way or that, but simply that the condition of activity or rest of the muscular and glandular organs of the body, together with the conscious feeling, is the mode of meeting the situation adopted. The adoption of this particular attitude is the outcome of many factors, the consideration of which will give us the key to a rational method of teaching this subject. The person popularly described as insane, the hysteric, the psychasthenic and the man with nervous dyspepsia have all adopted a certain attitude toward the situation in which they are placed. This may be described as unusual or abnormal but not necessarily as diseased and certainly *not* as a disease of any hypothetic mind. The conduct and behavior, the delusions and often the sense falsifications thus cease to be "symptoms" of any special disease process but take their true position as part of a particular mode of meeting some situation. This is the situation as it appears to the patient and not necessarily that which the onlooker perceives.

The factors which must be considered in teaching concern not only the condition of the nervous system but also that of the whole body. It must be obvious from what has already been said that disturbance of the general attitude, including the feelings or moods, is inseparable from a lack of harmonious cooperation among the parts of the body. Such disturbances (symptomatic depressions, etc.), result, as we well know, from disease of all organs, and these facts need illustration and analysis in any course of study. From them can well be deduced the further fact that, even without disease, organs may be so poorly constructed that they fail to perform their function adequately whenever any special call is made on them, with consequent general disharmony and concomitant affective disturbance.

The selection of the reaction to any given situation depends in the first place on the adequate functioning of the various sense-organs in the collection of information concerning the facts to be faced. Granting that this be done, there may follow an immediate reaction without possibility of selection depending on the fact that the situation is one of such frequent occurrence and importance that the best way of dealing with it has become automatic for the individual or race. On the other hand, if a set stereotyped mode of adjustment is not present there follows activity in the associative pathways of the brain which implies the conscious-becoming of similar past experiences and the reactions which have been made to them together with the consequences of such reactions. We have then here a mechanism which is more or less peculiar to each individual depending, as it does, on the associative connections with which he was born and those which have been established as the result of his individual experience.

Finally we have to consider the fact that nerve-tissue is liable to suffer in its functional capacity as the result of disorders in nutrition and of disease. The only specific function of nerve-tissue is that of excitability with transmission of this state of excitement. It initiates nothing but merely responds to stimulation. Hence disturbances of function can be only disturbances of conduction. The excitability may be increased, diminished or lost, but there is no other possibility.

With these in mind it is obvious that in teaching psychiatry it is first necessary to consider the question of the kind of associative mechanism or mode of meeting situations with which an individual is born. Psychiatry provides for us most admirable examples of at least some types, readily grasped for the reason that they are grossly exaggerated. Among these would be included such kinds of adjustment (or, as they are also called, reaction types) which, according to the most prevalent classification, are grouped as hysteria, psychasthenia, manic-depressive insanity, paranoia, psychopathic personalities, and at least a large majority of the disorders classed under dementia præcox. These should be taught not as "diseases" but as illustrations of personal modes of adjustment. It is now recognized quite generally that the peculiar conduct and conclusions of these patients which make up the so-called "symptoms" of their insanity or psychoneurosis are only exaggerations of the manner of meeting difficulties which these people have always shown more or less clearly. Furthermore, we know that similar reactions are shown by supposedly "normal" persons, and that the "attack of insanity" is only precipitated by the call to face some situation of especial importance and difficulty, be this disease or merely circumstance. Clinical demonstrations of such types carried out from this point of view with analysis of the observed abnormalities in order to establish the underlying attitude or mode of adjustment will teach far more of practical value than any hypothetic considerations of toxins, degenerations, etc. It will lead to an intelligent appreciation of many of the nervous disorders of various organic functions so common in general and special practice and will lay the foundation for a rational consideration of the training and education of a child in relation to his personal mode of meeting difficulties which is generally more or less obvious before the outbreak of a more definite exaggeration or psychosis.

Various attempts have been made to standardize tests for the determination of what is called intelli-

gence which is practically identical with adaptability. These tests represent a method of placing situations before the subject with the object of observing his mode of adjustment. The Binet-Simon tests have proved of great value in this way and should in my opinion be taught in our medical schools. Yet I would lay especial emphasis on the point that in their use the object should not be merely to estimate the age of intelligence which has been reached but to study the mode and kind of reaction which the individual shows. That this has a relation to age periods is not surprising because development is gradual, while experience and training modify and improve the possibilities of adjustment with which the individual starts.

Considerable emphasis has been laid on this particular phase of the problem for the reason that personal experience, as well as that derived from teaching others, has convinced me that it is of fundamental importance to a practical grasp of this subject. Whether such peculiarities in personal modes of adaptation will ever be satisfactorily related to structural anomalies only the future can decide, but it may be pointed out that quite similar problems are to be faced in connection with even such a prosaic organ as the kidney. That some kidneys, even apparently under quite ordinary conditions of life and without evidence of structural defect, secrete albumin, alkapton, cystin and indol-acetic acid will serve as an admirable illustration.

With regard to the teaching of the results of nutritional and structural changes in the nervous system there is but little need for me to go into detail. The effects of poisons and poor nutrition in the production of altered excitability, the consequent occurrence of clouding of consciousness with illusory misinterpretations, usually combined with disorder in mood consequent on the general disharmony of the bodily organs as a result of the intoxication and the facilitation which this exercises on those nerve pathways associated with such an attitude which again leads to sense falsifications and disturbances in thought and conduct are matters commonly taught. In describing disorders resulting from gross structural change such as general paralysis of the insane and arteriosclerotic destructions of nerve-tissue, it should be remembered that the chief evidences of the disease condition are those which result from loss of conductivity in nerve pathways, while the picture presented will necessarily be colored by the individual mode of reaction peculiar to the patient. The adjustments that he makes will still show the stamp peculiar to him in so far as the necessary nerve connections are left intact by the disease.

The course recommended may then be summarized briefly as follows:

1. Nerve physiology with especial consideration of the integrative actions as taught by Sherrington.
2. Dynamic psychology or a study of the modes of reaction accomplished through the cerebral associative system.
3. Study of individual reaction types with especial emphasis on their importance in the prevention of insanity. Under this heading would come the Binet-Simon tests of intelligence.
4. Disorders of attitude resulting from disease or inadequacy of the effector organs of the body.
5. The effects of changes in the nervous system produced by intoxication and malnutrition.
6. The effects of gross structural alterations in the nervous system.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MOORE AND SINGER

DR. C. W. BURR, Philadelphia: The old psychology threw no light on any problem in mental disease, but in the past few years psychology has broadened out and has taken in what seemed formerly to some of us conservatives as brain physiology, as reflex action, for example, or sensory symptoms, as well as the normal condition of the senses; palsies, aphasic conditions, etc., which we thought had nothing to do with psychology. More recently psychology has been made to include pedagogy both as regards normal and abnormal children, and questions of moral law, subjects far from medical as many of us think. The psychogenic origin of many mental diseases as taught by modern psychology seems to be based on very slight foundation. The questions for us to answer are: Is psychology of any use in the teaching of mental disease? What methods of teaching shall we follow? What time can we devote to it? I do not think the study of psychology has thrown any light on psychiatry. Many of our explanations of disease are not explanations at all. We are getting as far away from the truth as the older metaphysicians. In teaching psychiatry we should endeavor to teach the student how to distinguish a sane man from an insane one, and if insanity is present, what to do for the man—how to take care of him, how to treat him, when to decide that he must be confined, when it is safe to permit him to be at large, when he should be given medicine and when not, whether his trouble is syphilitic, or whether medication would do harm, questions of responsibility, etc. Mental diseases should be taught in precisely the same way as bodily diseases. They should be regarded as disorders of the function of the brain and not as some mysterious thing separate from the brain. I do not think a great deal of time can be devoted to the teaching of psychiatry. I have thirty-two compulsory hours in the third year and voluntary classes of eleven hours each in the fourth year. The course should be largely clinical. The didactic lecture does not have much place in the teaching of psychiatry. A hospital is requisite. It should be large enough to furnish examples of the ordinary insanities in more or less coordinated fashion so that the study may be systematic. Dr. Singer is really right in saying that there are no insanities, merely mental symptoms of disease of the brain. The Binet test has the fundamental error of assuming that feeble-mindedness is nothing more than normal growth up to a certain point, but not as high as it ought to be. That is not true. The imbecile boy of 20 is not the normal boy of 10. There is not only a quantitative unlikeness between the two, but a qualitative unlikeness as well. I have never seen an imbecile or backward boy or girl who was normal for any age at all. For that reason I do not think the Binet test is of much value.

DR. C. R. WOODSON, St. Joseph, Mo.: If I were going to advise what to teach students of psychiatry, I should say that they should know how to recognize insanity, how to recognize the border-line cases, should be warned of the danger of not recognizing and caring for the depressive forms, and those who have one or two delusions but who have the mental capacity to perpetrate and carry out almost anything they may desire. I would advise them of the danger to the patient in the manic depressive forms of insanity, that there is more danger of the patient being hurt than of hurting any one else, from the fact that any layman can recognize this form of insanity; that they should place these patients where they can be cared for, or should care for them themselves; as to the advisability of treating an individual who has a disease of the brain or mind. Demonstrate by presenting to the clinic a typical picture; advise with regard to protecting society and the patient's family, in protecting his property, as to how to commit in the event that the patient has not sufficient means to be cared for; how to testify if the patient's testamentary capacity is involved, and how to discriminate whether or not he is a malingerer. I would recommend that the patient be induced to sleep a natural sleep as quickly as possible: not by the administration of hypnotics, but by

providing a good bed, a good atmosphere, a suitable nurse, suitable baths, suitable food. Many patients who do not otherwise sleep, sleep well when provided with these things. The patient who is insane should be watched as closely as the patient who has been subjected to the most difficult operation that comes under the surgeon's hand. I would advise the student how to diagnose the various forms of insanity, in such language as they can understand. If the patient did not eat or could not be persuaded to eat, I would advise tube-feeding and show them how it is done. I would advise the free use of water, and when the patient's condition will allow, the free use of sunshine and fresh air. If the time is too short to give a medical student such instruction in this subject, give him such instruction as will enable him to recognize the disease, to protect society, prevent the patient from becoming a violator of the laws of the commonwealth, to help restore him and place him in the best surroundings or institution that the patient's means will permit. If you give this instruction, there is time enough in which to follow up those things which some people have been inclined to designate as mysterious or metaphysical. I do not condemn the methods advocated, but I do say, give him the practical, and there is no reason on earth why the medical student can not be given ideas on how to recognize the condition and its etiology and how to treat and care for it, and then if desired he may later on take up these additional factors. Each medical college must determine for itself the period of time that it allots to the teaching of psychiatry. Insanity should be recognized by any student who has received thirty or forty lectures on the subject, especially if he has had a dozen clinics presented along the various lines without particular attention to classification.

Dr. James J. Putnam, Boston: With regard to the time that should be allotted to psychiatry in any given medical school, we can only present our views and then let the faculties of our schools adjust the various claims as they best can. We should, of course, emphasize the importance of a subject which we deem so vital to society, and I think there is nothing more important than to teach people what can be done in the way of prevention of insanity. Dr. Singer's paper seems so closely in line with what I tried to say, that I have nothing to offer, except with regard to one point. As I understand it, Dr. Singer would study mental disease just as all naturalists study their subjects; that is, through description and the collection of data under recognition of the view that they are dynamic processes with which we have to deal. We are not to be obliged, I presume, even to call these processes "normal" or "abnormal," we are simply to observe what happens in consequence of each new disturbance which they induce, just as if we were making laboratory experiments on "reactions." In other words, we are to treat diseases as "adaptations." The difficulty with the law of adaptation, however, is that it leaves the force that underlies the adaptation untouched. I think very likely it is true that from the point of view of the teacher we must leave that force untouched; but that something there needs study seems to me very certain. The question still is pertinent. What is it that leads animals to adapt themselves?

Dr. J. T. Fisher, Los Angeles: As a teacher of psychiatry I am very much interested in this subject. Dr. Burr has already said exactly what I had in mind to express. I believe absolutely as he does in the matter of the teaching of psychiatry in medical schools. With reference to the advantage or disadvantage of a previous knowledge of psychology on the part of a medical student, I would rather have students who have had, prior to entering the medical school, a course in psychology. I have had, however, many medical students who have had that training and many more who have not, and from my analysis of their mental qualifications at the time they came into the courses I can not say that those who have had a previous knowledge of psychology are any better fitted for their work than those who have not. We have, in the Psychopathic Hospital at Los Angeles, a large number of patients, and in addition to the work of the junior students in anatomy and physiology of the nervous system we commence at once giving one clinic each week, which is from an hour to two hours in duration, simply presenting from one to five or six cases for his or her edification and study, not infrequently requiring the student to examine these patients at periods before the clinic occurs. We differentiate and attempt to classify and teach our students the different types of the psychoses as they come to our attention. This particular clinical work is continued without any interruption both in the junior and in the senior year. In addition, while I may be antiquated, I believe it is quite necessary, notwithstanding the present teaching, that the student should have a certain number of didactic lectures, for this stimulates him to read up about the various types of the disease. In our school we give, once a week, a didactic talk from three-quarters of an hour to an hour in length, not only during the junior years, but in the senior year.

Dr. Frank P. Norbury, Springfield, Ill.: I speak from the point of view of one who for some time conducted examinations of students and graduates in medicine from various medical colleges. These examinations gave me the opportunity to study the relative importance given to nervous and mental diseases in one locality as compared with another. The results of examination, simple and elementary as they were, proved beyond a doubt the need of improving the teaching of psychiatry in all of our schools. Especially is it necessary to put it on an equal footing in clinical teaching with other departments of medicine. Psychology is simply the study of human conduct with its varied experiences. It is the science of the inner life and as such is varied, active and useful. Metaphysical psychology received its death blow in relation to mental disease some years ago and especially after Maudsley's books, "The Pathology of Mind," "Body and Will" appeared, which later were followed by his book "Life in Mind and Conduct." We have a new psychology, such as delineated by Dr. Singer, which should be incorporated in all of our medical teaching. The work of Dr. Singer stands for itself in Illinois hospital service as shown by the results of examinations and the work done in this public service. His work is representative of the great advance made in modern teaching in many of our medical schools.

Dr. Ross Moore, Los Angeles: I believe that the medical colleges and perhaps the Council on Medical Education do not consider external things sufficiently. A moment's consideration will make us all realize the particular wave of psychism or psychology that is going over the world to-day. I do not know that the college curriculum should reflect in any way such things as that. Possibly the curriculum committees would say that this is paying too much attention to the direction in which the surface winds are blowing and is not conservative enough. At the same time I do believe that psychiatry does not fill in the curriculum of the medical college the place which mental conditions fill in health and disease. My feeling is that we are out of proportion in our teaching of psychiatry as compared with the teaching of a number of other things which are given equal place and importance in the curriculum. The thing which seems to me to be the crux of the situation just now is that the curriculum committees of the individual colleges—I am speaking of averages, not with reference to any particular institution—do not give the subject of mental diseases any consideration whatever in the average. There are thirty-two or twenty-eight or forty hours given to it, and that have been given to it for many years, and the curriculum committee of the average school takes it for granted, it is a hard and fast rule, that they will continue for all the years the medical college continues. I believe it is our duty and privilege as teachers of psychiatry and members of the neurologic or psychiatric section of the American Medical Association, to go a little farther and be a little more active than we have been in presenting our claims as to the teaching of psychiatry, in order that the coming generation of physicians may know the subject better in its beginnings and therefore may take steps which will prevent insanity in the mass and in the individual in future generations.

DR. H. DOUGLAS SINGER, Hospital, Ill.: With regard to some of the remarks which have been made by Dr. Burr and others, I feel that certain criticisms are absolutely necessary, because it is exactly that attitude which is of most importance in determining how psychiatry should be taught and what will be the results. I am quite in accord with those who say that the medical curriculum is very full, that the student has little time to digest the material he receives. It is therefore important that he should be taught fundamentals, not hypotheses, as has been said. The question is, what are the fundamentals, what are the facts? Because the various features generally included in lectures on general symptomatology and general etiology have come down to us from a good many generations of teachers, is no evidence that they are facts and not hypotheses. I feel strongly that most of them are extremely hypothetic. The teaching, for instance, that paranoia, as mentioned by Dr. Burr, is a disease without any lesion and a type for a number of other psychoses, is certainly open to considerable question. Psychology is nothing but a study of the mechanism of thinking, the mechanism whereby the conclusions are reached which represent an individual's character, conduct and behavior. It is a question of the manner in which the individual meets the conditions in which he is placed.

Like Dr. Putnam, I am fully aware that I have left out of consideration in speaking of this matter the question of what is the vital energy that lies behind these adjustments and adaptations. This is practically synonymous with what those advocating the Freudian doctrines speak of as "libido." This omission is not unintentional but purposeful. At present it is asking too much to attempt to teach this particular subject. It goes too far and is not sufficiently clearly outlined. We must all acknowledge that everything that we do in life, the mere fact of living, breathing, heart movements, reflexes, etc., constitute adaptation to our surroundings. They are means of procuring certain ends and this is universally accepted as an axiom from which to start. For the present we may leave it simply in that way. The main point I tried to establish is that in psychiatry we are not merely trying to study what are called the symptoms of insanity, we are not trying to establish that the patient has a delusion, that he is trying to commit suicide, or anything else; we are trying to determine what is the situation which he is meeting in this particular manner. That is really what the whole subject amounts to.

OPERATIVE INTERVENTION IN CYST OF THE LEFT CEREBRAL HEMISPHERE

WITH A CONSIDERATION OF THE PREOPERATIVE AND SUBSEQUENT SYMPTOMS

CHARLES M. REMSEN, M.D.
ATLANTA, GA.

The interesting symptom-complex viewed in this case and the successful amelioration and alleviation by operative intervention will perhaps warrant a careful consideration from all points of view.

REPORT OF CASE

History.—A man, aged 59, was referred to me July 25, 1913, for aphasia. The family and past history were negative; no suggestion of any neurotic or specific taint. Seven years previous, the patient while in the midst of a conversation was suddenly rendered unconscious. A doctor diagnosed the case as "paralysis," but the patient denies the existence of such. He does, however, remember that immediately on recovering consciousness he was unable to find the proper words by which to express himself. Since then there has been some improvement, but lately a gradual regression has ensued. There have been occasional attacks ever since of dizziness and a sensation of moving away from objects at which he was looking. Only once had he an attack severe enough to cause a fall.

Examination.—This disclosed blood-pressure of 200; pulse 68; no nausea or vomiting. The cranial nerves were normal. There were no sensory disturbances. The motor functions were normal. (Weakness on the right side was carefully sought for on account of the aphasia.) The stereognostic sense was slightly disturbed and failures occasionally occurred in the right hand. There was no apraxia or ataxia. The sense of position disclosed on examination no abnormalities. Romberg's and Babinski's signs were absent. There were no contractions or rigidities; no tetany or tremor. The superficial, deep and organic reflexes disclosed a normal state of activity. Trophic disturbances were absent. The psychic examination revealed a quick, emotional and high-strung disposition and a good memory. There were no hallucinations or delusions. Aphasic disturbances were very evident. Spontaneous speech was punctuated by many mistakes and the patient was unable to find the correct words to express himself, though comprehension of the word, when prompted, was immediate. The repetition of phrases was performed fairly well, though he occasionally made gross mistakes. Reading aloud was performed with great difficulty, and only by continual urging could a word or title be repeated very slowly. The patient was able to sign his name, but was unable to write anything else spontaneously. To dictation he could write slowly but not very legibly, and in copying was extremely backward. At this time a diagnosis was made of hemorrhagic destruction of a localized area of the brain cortex in the region of the angular gyrus and involving also Broca's area. The patient was advised to follow the therapeutic measures conducive to a diminution of the blood-pressure.

Track of the patient was lost until February, 1914. A note made then disclosed a condition similar to that of the previous visit, except that the aphasia was slightly more marked. In March, 1914, he returned to the office complaining of greater nervousness and an increasing difficulty in expressing himself. Blood-pressure was 195, pulse 52, and the patient had occasional gagging and nauseating sensations, and a feeling of tightness in the head which had been experienced only the last few weeks. He had also had spells of convulsive jerking of the fingers of the forearm on the right side associated with quite marked numbness in the same region. The usual seat of onset of these clonic spasms was in the forefinger and thumb.

Three days later the patient reported that he had had a severe convulsive attack of the hand, with marked numbness lasting for half an hour. During the next week the Jacksonian attacks were very frequent, and were witnessed twice in the office. Sensory disturbances were marked. There was distinct dulling of heat and cold perception, and of pain and of touch over an area involving the hand and lower half of the forearm. It was impossible in a small number of trials to differentiate the various sensations. On the foot, but not extending up the leg, was a similar but less marked disturbance of sense perception. The examination of motility disclosed no weakness of the cranial motor nerves. There was a definite weakness in the fingers and wrist of the right side, demonstrable in each movement—abduction, adduction, extension and flexion. Separation of the fingers was utterly impossible, while flexion of the fingers led to the greatest functional weakness. No disturbances were noted in the muscles of the upper arm. The hand itself as well as the forearm was seen in occasional spasms of flexion and supination, which were frequently associated with attacks of numbness in the same area.

April 7, the patient developed for the first time a slight weakness in the right foot which evidenced itself quite perceptibly by a dragging of the foot on walking. Closer examination disclosed a weakness involving the anterior tibial group, especially, but also the posterior muscles and the peroneal group. The aphasic disturbances were very evident. Spontaneous speech, the repetition of spoken words and reading aloud showed disturbances similar to the first examina-

tion about one year previous. Such repetitions as "Peetreet" for "Peachtree Street" were extremely common. Spontaneous writing outside of the patient's signature was impossible. In copying printed titles of three words, from four to six minutes were employed in this transference. It was almost impossible for the patient to transfer spoken speech to writing. Simple arithmetical sums were performed.

Inability to name objects was present in about 20 per cent. of the tests, and the patient was able to tell their use in a large percentage of the tests, though of course the explanation was paraphasic.

Apraxia was principally of the limb-kinetic variety (Liepmann). The finer and more intricate movements performed by the fingers were impossible. Such motions as buttoning the coat, using table utensils, etc., could not be performed, though the manipulation of a pencil in writing was moderately fair.

The ideokinetic variety evidenced itself in from 20 to 30 per cent. of the trials by such derailments as grasping an object when directed to write.

Consideration of the stereognostic sense was interesting. Simple articles, such as keys and pencils, when placed in the right hand were very frequently unrecognized. Probably 75 per cent. of the tests were failures.

Psychically considered, the patient was still emotional and high strung and there was a great tendency toward the hyperexcitable state of mind when involved in any conversation.

Examination of the ataxic disturbances disclosed correct execution of the simpler tests to be extremely rare. When directed to perform the finger-chin test the error would be sometimes so great that the patient would touch his forehead or ear.

The sense of position disclosed perhaps the greatest disturbances of all. It was utterly impossible for the patient to ascertain the position in which his right arm had been passively placed. It was not at all extraordinary for him to reach in front of him for his right arm and hand when they had been placed back of his head.

Reflexes revealed a slight exaggeration of the knee-jerks, particularly on the right side, but there was no ankle clonus or Babinski reaction. Superficial and organic reflexes were normal.

Examination of the eye revealed no paralyses. Eye grounds were slightly anemic. There was no edema. Perimetric findings were normal.

Examination of the cerebrospinal fluid showed a negative Wassermann.

Consideration of the signs and symptoms in this case led us to believe that the lesion was located on both sides of the fissure of Rolando and likewise involved the angular gyrus. Owing to the character of the perimetric findings a deep-seated location was not judged probable.

I am indebted to Dr. Hansell Crenshaw for the following summation, arrived at from an independent examination:

"We know that the patient in this case suffered from a brain lesion because of his difficulty of speech; and additional support is lent to this opinion by the increased knee-jerks indicating upper neuron involvement, and by the patient's inability to recognize the nature of objects merely through the tactile sense of the hand. Moreover, the twitching of the muscles of the right hand suggested an irritative lesion of the motor hand center, on the left side of the brain; and the dragging foot indicated a corresponding left motor center destruction. Thus it was evident that the motor area of the right hand and foot were involved in the lesion. It was further evident that the angular gyrus situated between the parietal and temporal lobes near the posterior extremity of the fissure of Sylvius was doubly involved, because the perception of written words occurs in this gyrus and because the stereogenous sense—the power to recognize objects by their feel—is also a function of this particular fold of the gray matter. Agraphia, then, or word-blindness, and astereognosis, or inability to know objects through the tactile sense, both being well marked in this case, the angular gyrus was decided on as a probable posterior boundary of involvement, while the motor area of the frontal lobe was taken as the probable anterior limit."

Operation.—This was performed by Dr. Remsen, April 17. At this time an osteoplastic flap was fashioned to include exposure of both motor region and angular gyrus on the left side. This flap was turned out on its hinge, replaced and sutured without opening the dura. The second stage of the operation was performed April 21. The osteoplastic flap was turned out again and the dura opened corresponding to the flap. The findings were as follows: In the center of the dural flap the dura was adherent to the underlying brain. This was easily separated and the cortex viewed. The cortex was yellowish and pale and flecked with bright yellow splotches which appeared to be the result of old and small hemorrhages. The spots measured about 0.5 to 1 cm. in diameter and resembled in appearance calcified areas. The cortex as a whole showed various hues of pale yellow, and few blood-vessels were seen except in the anterior part of the exposure. Here were several blood-vessels of normal size and the brain had a normal purplish-gray hue. The posterior portion of the exposure showed the same pale-yellow, anemic appearance and on careful depression under the posterior border of the skull this anemic condition could be seen extending posteriorly for a distance as far as 3 to 5 cm., gradually diffusing into normal-appearing cortical substance. The anterior outlines of the area were more sharply demarcated. The upper and lower boundaries corresponded with the flap. The substance of the cortex bulged out in a thinned shell corresponding to the pale-yellow area (5 by 7 cm.), and palpation suggested fluid. An exploring trochar revealed after penetrating a thin cortical layer about 0.25 cm. thick, clear, pale-yellow fluid under tension shooting up a distance of a foot from the operative field. About ½ ounce was evacuated this way, and the cortex immediately collapsed and wrinkled up over this area. Examination of the puncture hole showed the brain cortex to be jelly-like in consistency, in cross section. Further exploration of the cavity revealed no definite cyst wall and it seemed probable that the condition was either a cystic degeneration from circulatory disturbances or else an old hemorrhage which had caused the formation of a cyst. On account of the possibility of infection, drainage was deemed inadvisable, especially as there was an opening 0.5 cm. in diameter connecting the cavity with the subdural space. This was not tampered with. Unipolar faradism did not reveal response, but this was not persisted in very long. Our landmarks were merely from the external measurements and were, therefore, not as accurate as if we had obtained responses from direct stimulation of the cortex.

Closure was done in the usual manner, the dura with interrupted fine black silk, the fascia with the same, after the osteopastic flap had been replaced, and the skin with interrupted fine black silk.

Result.—Twenty-four hours after operation the general condition was excellent and the patient seemed very little disturbed from the operative procedure. The examination for motility exhibited no great change twenty-four hours after operation. There was a difficulty in performing the finer movements of the fingers and wrist (mostly apraxic). Flexion of the fingers and abduction of the thumb were especially weakened and limited. Separation of the fingers was as yet impossible. The anterior tibial group was unchanged, and abduction and adduction of the foot as well as extension showed an unchanged weakness. Examinations at intervals for the next eight weeks exhibited an intermittently improving change in the character of the motility of the right hand. (It is interesting to note that the lower phases of this intermittent progress were usually associated with rather marked trophic disturbances, evidencing themselves by a peculiar cyanosis, and a transient, boggy swelling limited to the fingers and palm.) At the end of eight weeks flexion of the hand was such that the patient was able to grasp objects such as a bottle or book, etc. The weakness of the extension of the fingers and wrist had practically disappeared, and adduction and abduction, though still weak, showed a distinct change for the better. At this time, too, the thumb motions had arrived almost at a normal state of activity. The Jacksonian

attacks in the right hand have occurred but twice since operation, and within the first three weeks. Since then there has been a complete disappearance of this symptom of motor irritation. The results with the foot were encouraging. Weakness of the dorsal flexor group disappeared. There is still weakness in the plantar flexor group, so that the dragging of the foot, which may be remembered as a prominent feature, is now only of occasional occurrence. Examination twelve weeks after operation showed a still further improvement in the hand. Flexion of the fingers describes the normal arc, allowing the patient to use his hand with only slight difficulty, and this is perhaps more of an apraxic disturbance than a sensory-motor insufficiency. Strength of the grip is excellent, and the wrist movements as well as extension of the fingers is such that it will be difficult to tell this from the normal condition. In the foot, weakness of the dorsal and plantar flexors is not demonstrable. The dragging of the foot on walking has disappeared completely, while resistance to passive motion does not demonstrate any perceptible weakness in the anterior or peroneal group of muscles.

On examination of sensory disturbances forty-eight hours after operation, information was offered by the patient that his hand felt "more natural," and "not so numb." No subjective symptoms were experienced in the foot. No careful tests were made until two weeks after operation, when it was found that the area involving disturbance of heat and cold perception had diminished somewhat so that the upper limit was located at the wrist. Below this, disturbances to sense perception showed no improvement. At times, it may be noted, this condition was as bad as before operation, but these periods of regression were extremely transient, and soon passed off to be followed by an improvement. It was not until the end of eight weeks that we could notice anything like a permanent improvement in the hand. Disturbances in sense perception of the foot entirely cleared up within the month following operation. In the last four weeks it has been possible to follow with accuracy the diminution in the area, the upper limit of which has gradually descended until disturbances in touch perception, especially in the palm of the hand and over the dorsum of the wrist, still stand as the sole reminder of the past disturbances in this field. Subjectively, there is still occasionally an attack of slight numbness in the hand (sensory epilepsy?) which is, however, very evanescent.

No tests for ataxia were made until eight days after operation. At this time the patient had a rather gross ataxia of the right arm and hand and was utterly unable to perform such movements as touching the tip of the nose with the finger. During the seven weeks following, there have been periods of quite marked improvement punctuated with short spells of regression, but during the last month the periods of regression have been absent. The patient still diverges from 1 to 2 inches in touching the finger to stated points. Probably 75 per cent. of his trials are perfect, while the remaining 25 per cent. show this divergence. During the two months following the operation there seemed to be a slight but definite ataxia of the right foot and leg as evidenced in the patient's gait, which occasionally even suggested tabetic stride. This, complicated by the muscular disturbances, made walking not only burdensome but impossible. Lately this ataxic condition has shown a steady decrease, and at present cannot be demonstrated.

On examination fourteen days after operation, perception of the sense of position began to appear. Here we have seen a fairly steady progress with little or no periods of regression. At the end of the eighth week the patient was able to tell in approximately 80 per cent. of the trials the exact position of the arm when passively placed in various attitudes. At present practically 90 per cent. of the trials are successful.

The stereognostic sense showed at first a slow improvement, and was intermittent in its progress. Nevertheless, on the eighth week the patient showed an ability to recognize objects placed in the right hand with a fair degree of accuracy, about 50 per cent of the tests being perceived. Four weeks later, about ten objects were tried, such as a key, watch, pencil, ink bottle, match box and the like, and each object was readily recognized with the exception of one, the recognition of which was delayed for about two minutes.

Evidences of trophic disturbances existed six weeks after operation as seen by cyanosis, glossiness of the skin and a boggy swelling. These were quite marked at the examination two weeks after operation. The fingers were probably half again as big as the fingers of the left hand, while the glossiness and cyanosis were equally as evident. This condition was more or less transient, and appeared several times quite rapidly, possibly in the course of a few hours. Each exacerbation was rather sudden in its appearance, but subsequent diminution usually appeared shortly. Forty-eight hours previous to the last examination the patient had a similar symptom-complex, though the glossiness and cyanosis of the skin was practically absent, and the swelling of the fingers was such that without close observation this symptom might have been entirely missed. (No such disturbances were seen on the foot.) These disturbances went hand in hand with the regression in the sensory disturbances and would frequently mechanically interfere with the motility.

There has been but little disturbance of reflexes. The extremely slight increase which had been noted once in the arm was replaced by a quickly shifting variation in the reflexes on one or the other side, so that at no time was there any permanent distinction. The knee reflex of the right side, however, remained slightly increased. The superficial and organic reflexes have remained unchanged and normal.

The stimulation of the muscles by electricity has been of no special significance. Faradism to the weakened groups showed active response. Galvanism produced normal response.

Contractions and rigidities of the muscles have always been absent.

Apraxic disturbances have been extremely interesting. It will be noted that in the preoperative examination the more intricate movements of the fingers did not exist. Not only was the patient unable to perform such fine movements as buttoning his coat or putting on his collar, but it was also seen that there was frequently a derailment of motor actions, and he would comply to a request by an entirely different motion from that which he was directed to perform. It was noted, however, that subconsciously or spontaneously the patient could perform these movements when the necessity arose. The so-called ideatory apraxia, as far as could be judged, did not exist. The study of the first disturbance (limb-kinetic apraxia) revealed a marked improvement, especially in the last week. From almost utter helplessness, a condition which could not be accounted for by his local sensory motor disturbances, the patient has gradually begun to assume normal duties of eating and dressing with the aid of his hand, and at present rarely requires aid in the performance of these functions. The peculiar derailments noted in the second form of apraxia (ideokinetic) disappeared at the end of the eighth week, and have shown no tendency to appear.

The study of the aphasic disturbances has likewise been an interesting feature of this case. Spontaneous speech has shown the most erratic and striking changes. Eighteen hours after operation the patient showed an improvement which has never been equaled since then. At this time we held a 20-minute conversation, during which time his speech was fluent, easy, rapid and marked by not more than two or three mistakes. This change was noted immediately by the patient, who remarked on it. Following this phase, at examination three weeks later, he was making quite frequent mistakes—perhaps roughly about half as many as before operation. With periods of regression sketched on a broad background of progressive improvement, examination thirteen weeks after operation disclosed, as rare occurrences, mistakes in spontaneous speech, possibly one mistake being made in every one- to two-minute conversation. It was noted that the mistakes were corrected rather rapidly, a condition which had not been seen before. The patient says that he was involved in a long discussion several days previous, and was informed

by his son the next day that speech mistakes were very rare. The Sunday previous the patient was called on in church to make a speech and was able to get up without difficulty and tell the assemblage that he had been sick for a long time and did not wish to strain himself attempting to talk publicly. Even under this excitement the patient volunteers that he made no errors.

The tests made four weeks after operation in the repetition of spoken words showed an ability to repeat words with great precision. Following this there was a period during which quite marked difficulty was experienced in this act, but this soon passed away. In the last three weeks repetition has been excellent.

The ability to read aloud has perhaps shown the greatest improvement. Such titles as those on magazines could be read at the end of the eighth week with some difficulty but with much greater facility than previously. The patient says that within the last two weeks (from ten to twelve weeks after operation) he has been able to repeat names that have been on the side of wagons, headlines on newspapers, and various other names which before this time he was entirely unable to transfer into speech, and tests uphold his statements. Legends are read with little difficulty.

Spontaneous writing shows a distinct improvement. At present when asked to write short phrases on a given subject he is able to do this immediately and fairly legibly.

Perhaps the only improvement in writing to dictation has been noted in the time taken to write a short phrase. Twelve weeks after operation the patient, though unable to write legibly, is able, nevertheless, to write immediately and without the continual repetition necessary before. On copying words and letters the patient shows little improvement in legibility, but the response is almost immediate.

In the addition and recognition of numbers there is an almost normal state of affairs. The patient still shows his ability to tell time immediately and he is able to pick out of ten objects each one as it is named. Several weeks after operation there was some hesitancy in this act. The use of these objects has always been recognized fairly well, but it is only lately that the patient has been able to express very clearly the various words.

The symptoms of intracranial pressure have been as follows: Blood-pressure has decreased from 200 mm. by an irregular descent to 160. The pulse fell from 60 down to as low as 52 three weeks after the operation, and gradually and intermittently rose to what was its highest point thirteen weeks after operation, when it registered 84. There have been no vomiting spells or nausea. The eyesight and vision have remained the same.

The psychic state has shown a peculiar course. The patient was emotional to a high degree before operation; there was a comparative stability until about six weeks after operation, when there was an extreme exacerbation of the emotional state, and an inability to utter more than a few words without a crying spell. This condition passed off within the course of a few days, but after that there was a slight tendency toward a depressed feeling. A feeling of encouragement on the part of the patient, and a general return of his good health has been accomplished in the last two weeks by a period of mental stability, which has not been seen in him before. At the present, even now, he is quite easily excited, but in the course of a normal conversation one would not recognize this feature.

Certain features associated with the accumulation and absorption of subdural and extradural fluid at the seat of operation are perhaps worthy of consideration. The wound healed by first intention. Stitches were removed the third day. The final dressing was made on the tenth day. About five weeks after operation there was noticed on deep palpation over the trephine holes what seemed to be a slight accumulation of fluid which would give fluctuation on deep pressure. This condition persisted for a week, and it was impossible to tell whether this was due to accumulation under the dura or to one extradurally located. From palpation it was judged that the dura was lifted and made rather tense under the trephine holes. This condition passed off after the eighth week. What is interesting to note is that associated with this probable subdural collection of fluid the psychic state was greatly disturbed and that the hand was in one of its periods of great regression at this time. Likewise, at this time, also, the aphasic symptoms showed an exacerbation which rapidly disappeared, hand in hand with the disappearance of the fluctuant accumulation.

CONCLUSIONS

The interesting points concerning this case have been:

1. The history, which suggested the hemorrhagic destruction of brain tissue with aphasic symptoms, followed later by an increase in the symptoms, which indicated a progressive, growing lesion.
2. The rapidity with which the motor and sensory disturbances became evident.
3. The drainage of the cyst by a subdural route made necessary, in our desire to avoid external drainage, by the jelly-like consistency of the brain tissue, which absolutely precluded the possibility of manipulative procedures in this region.
4. The accumulation of fluid under the dura at about the sixth week, as demonstrated through the trephine holes, and the associated psychic and sensory-motor disturbances.
5. The absorption of this fluid with a consequent improvement in the regressive symptoms noted with the previous accumulation.
6. The complete disappearance of the Jacksonian epileptic attacks and of the dragging of the foot, the striking improvement in the motility of the right hand, the marked diminution in the aphasic symptoms, and the betterment, often striking in character, of the sensory, stereognostic, apraxic, ataxic and position-sense disturbances.

Candler Building.

A CLINICAL CONTRIBUTION TO THE DIAGNOSIS OF EPILEPSY *

L. PIERCE CLARK, M.D.
NEW YORK

It may not be out of place at this time to make a further report on some studies of epilepsy that have engrossed my attention for several years. The subjects treated comprise the following:

1. The nature and character of the epileptic voice-sign.
2. The outcome of high-dosage administration of bromid for rapidly recurring petit mal.
3. The practical results in Roentgen-ray analysis of gastro-intestinal tracts of epileptics.
4. A short disquisition on the variations of the sella turcica in the recent state of epileptics as shown by Roentgen-ray analysis.
5. A graphic chart for recording the quantitative daily epileptic discharge in severe forms of epilepsy.
6. The differential diagnosis of psychogenic convulsions from genuine epilepsy, together with a plea for the establishment of a central laboratory of research into the nature and treatment of epilepsy.

THE EPILEPTIC VOICE SIGN

In 1907 I described what I called the epileptic voice sign, and through a method devised by Dr. Scripture

* Read before the National Association for the Study of Epilepsy, Baltimore, May 25, 1914.

we succeeded in making accurate records and charts of it. The defect was shown to be in the expressionless quality of the epileptic voice. It usually renders the frank epileptic incapable of singing beautifully or speaking well. When the voice defect is once pointed out it is obvious to any one. Instead of the continual rise and fall in melody the vowels and phrases run along on even tones. The speech of the epileptic may thus be designated as "plateau speech"; that is, the melody proceeds by even steps. There is also a tendency to monotony, that is, the successive sounds do not vary much from each other as in normal persons.

Although at the time of the report I expressed the opinion that probably the speech defect developed *pari passu* with the disease, I have since found that this is not the case, inasmuch as many epileptics that I have examined since my first report present the defect in a marked degree although but two or three seizures may have occurred. Again, I have recently examined a number of epileptic individuals in whom there has been an arrest of their disease for several years, and in spite of this prolonged arrest or cure, the voice sign persists nearly if not quite as marked as when the disease was active. One must therefore relegate the voice sign to a part of the make-up of the epileptic constitution, quite independent of the seizure phenomena *per se*. It is true that by appropriate exercises epileptics can learn to speak normally for a time, but the voice readily relapses to the epileptic type through negligence, and indeed, two of my private patients whose epilepsy was arrested for several years took a long and intensive training to remove this voice defect, but have relapsed to their former epileptic type of speech, although all epileptic manifestations have remained continually absent.

It is interesting to note that this voice sign is not the expression of a type of congenital feeble-mindedness so frequently postulated as the essentjal mental make-up of the preparoxysmal state of epileptics, which mental defect may be proved to exist in perhaps the great majority of the early epilepsies. To prove that the foregoing is true, I will state that in a study of ten selected cases from private practice the voice sign is present in all, although by various carefully given intellectual tests they in no wise suffer any deficit in the intellectual field. Indeed, two of the series were college graduates of no mediocre standing in their respective classes.

It may not be necessary to say that all extraneous causes for the presence of the voice sign such as station in life, bringing up, nationality and sedative treatment have been ruled out. Further, it may be said here that an analysis of the voice sign of some of the ordinary types of feeble-mindedness found in a series of children and adults has proved that their voice type was rather distinctive of another sort of defect entirely. If I were to hazard another guess at this late day, I should say that the voice sign is a part of the epileptic constitution that concerns a fault in the full elaboration of the functioning of speech in which the elemental adjustment of inhibitory control was absent. It is somewhat akin to the peculiarity shown in the awkwardness and lack of smoothness of other volitional movements, both voluntary and involuntary in character, that have so often been referred to by the older writers as the disorders of motility in epileptics independent of seizure periods such as was extensively studied by Reymond years ago. The voice sign is therefore psychophysical in the character and import. While the epileptic voice sign has been incorporated in many text-books, I believe that it has not yet received all the attention it deserves at the hands of clinicians, especially now, when the necessity of sharper distinction between affect epilepsy or psychogenic convulsions and the genuine malady has grown to be of so much importance.

HIGH DOSAGE OF BROMID IN RAPIDLY RECURRING PETIT MAL

Several years ago I reported on a new and rather rare form of rapidly recurring petit mal epilepsy and gave the details of the bizarre attacks in persons affected by it. Inasmuch as no similar cases have been placed on record since that report, the subject may be thought of little general clinical importance, but two or three points about the disorder are worthy of comment. I have seen one other such case since my report. The attacks in this peculiar form of epilepsy, it will be remembered, were in most instances a simple awakening from sleep, and the attacks occurred a hundred or more times in a single night. The patient no sooner fell asleep than the attacks began, either day or night. In one case as many as 300 separate and distinct attacks occurred in a single eight hours of sleep at night.

The patients usually awaken from deep sleep; the eyes are opened widely; the pupils are dilated and irresponsive to light; the head is moved from side to side. There is an anxious and furtive look in the face. The face may be congested or very pale, and is usually the one or the other to an extreme degree. In a few seconds after the onset the patient executes some incredibly rapid movements of the hands or feet, but with no clear intent or purpose, such as is seen in somnambulistic states. For instance, the patient drums on the bed, executes kicks aimlessly in space, or beats his head, thigh or chest in a senseless way. He may spring in the air or turn somersaults rapidly. Sometimes patients exhibit attention when spoken to, but they most frequently make no coherent reply. Unless disturbed, the patient soon passes into normal sleep at the end of the attack.

In Case 1 the patient met an accidental death after the petit mal had ceased three months. In Case 3 the patient relapsed after a year or more of freedom from her disease; grand mal attacks recurred, and she died of tuberculosis two years thereafter. In Case 4 the patient remained well for three years and then relapsed.

CASE 2.—This case, about which I shall make more extended report, was that of a young unmarried man who came under observation and treatment when he was 21 years old. His disease had originated when he was 18. The family history was negative so far as could be learned. The first seizure was that of petit mal, a turning of the head to the left, and the body was rotated several times to that side. The second seizure was of sufficient physical violence to throw the patient from his bed. The usual and ordinary doses of bromid sedatives stopped the seizures for a time, but later they recurred several times a day, but were always more frequent at night. In a six months' period of observation this patient had over 600 attacks of the peculiar petit mal previously outlined in this paper, and twenty-three typical grand mal attacks. In the next three months under the high dosage of sedatives he had but three grand mal diurnal attacks and no paroxysmal awakening seizures. Three months after, all epileptic manifestations ceased entirely and they have not recurred since. Sedatives were entirely discontinued three months after, or nine months

after the high-dosage plan was installed. He has been entirely well for thirteen years; has a good position as traveling salesman, is married and has two apparently normal children. He is in robust health physically and mentally. The point of special interest in these cases is that the peculiar attacks were immediately increased by the ordinary doses of bromid (from 60 to 120 grains daily), but as the dose was increased from 120 to 180, or even to 230 grains daily, as in the case with recovery, detailed above, all attacks ceased.

The process of treatment was undertaken with the greatest care. The principle of high dosage of bromid may be stated as a form of hyperbromidism, bromid intoxication or poisoning. The drug was given in a steadily increasing dose, as that of iodid in specific disease. The patient had high rectal irrigation once or twice daily to reduce the amount of congestive catarrh, eliminate toxins induced by faulty metabolism or deficient oxidation, and for its diuretic effect. The patient was also given prolonged hot packs and baths at night for diaphoretic effect, and cold douches, sprays and cold dripsheet treatment mornings to stimulate the peripheral sensory nerves and to preserve vasomotor tone. Vigorous deep massage was steadily maintained to cleanse the muscular circulation. The inordinate tendency to local stasis of circulation in the skin under such extreme sedation and its consequent depression of the skin function shown in acne, etc., was corrected by face packs, hot moist bran applications, and mild stimulation of ointment applied at night. Mouth and nasal cleanliness, occasional lavage of the stomach and large quantities of aerated Vichy water (two or three quarts daily) were necessary. Respiratory gymnastics were not forgotten.

The disorder might be considered as a paradoxical narcolepsy. While the condition is surely rare it is by no means the intractable form of epilepsy noted by Herpin and Delassauve. The recent case which has not yet been placed on record behaved in the same clinical manner as those above noted and was given the same treatment. The patient has now remained two years free from his paroxysmal awakening attacks, the last year without any sedatives, and has shown no other manifestations of the epileptic disorder.

GASTRO-INTESTINAL ROENTGENOSCOPY

Last year Dr. Bushy and I undertook to analyze thoroughly the gastro-intestinal tract of a small but select group of epileptics, and a report was made at the American Neurological Association in Washington. We found an abnormal position of the various parts of the gastro-intestinal tract present in every case examined. We were not then, nor are we yet, able to explain the genesis of these defects in epileptics. We presume, however, that it is not greatly dissimilar to that inducing the same condition in other persons not suffering from epilepsy. I believe that every case of beginning epilepsy ought to be thus analyzed whenever a markedly disordered digestion is in clinical evidence. In a few instances we demonstrated that the abdominal belts as ordinarily applied were entirely useless to replace abdominal viscera; neither the prolapsed splenic nor hepatic flexures were altered in the least by such appliances. It may be possible that the binders applied in the Trendelenburg position may be of service in this respect.

A point of considerable practical moment following these Roentgen-ray examinations has been a more or less definite indication to just what parts of the abdomen one should apply kneading and massage movements over the great intestine. I have found this therapeutic procedure of the greatest value, particularly when there has been a tendency to stasis in the ascending colon. One must remember that in not a few such cases of ptosed colon disorders but a little functional aid is all that is frequently needed. This view probably accounts for many simple practices being efficient, for a time at least, in restoring a relatively normal function of the colon in constipated persons. After all, the functional test of efficiency is the final proof of the value of any treatment for colon stasis. The outcome in such cases is the more easily rationalized if we know the relative position of the viscera as shown by Roentgen-ray examination of the intestinal tract. It may be added here that the reexamination of two cases of colon stasis several months after an improved functioning of the bowels had taken place showed no essential change of position in the structures which had been previously analyzed by the Roentgen ray. However this may be, we still believe that Roentgen analysis of the defective digestive tracts of epileptics is of both diagnostic and therapeutic value. It is an excellent supplement to the chemical and bacteriologic tests already in use. Close attention to the digestive tract forms a prominent part of any comprehensive hygienic plan of treatment in epilepsy.

VARIATIONS OF THE SELLA TURCICA

The foregoing subject leads us naturally to the next, a Roentgen study of the variations of the sella turcica as shown in the recent state in some epileptics. In a general way one may state that Roentgen-ray work on the head, particularly to gain valuable information of a positive nature, has not been much improved on, and our Roentgen knowledge of the variations in the cranial viscera has had no such advancement as that of the abdominal viscera. There is little opportunity as yet for us to make parts of the brain denser than others so the different parts of the cranial content may be made distinctive. It is true, however, that improved Roentgen technic has made possible an excellent examination of the entire bony envelope of the brain both inside and out. Even large tumors or abscesses in the brain, though they may be of considerable density, are infrequently recognizable by Roentgen ray. It seems therefore that a great step must still be taken before we shall discover a method of Roentgen analysis of actual brain alterations, such as minute focal or general gliosis of cortical tissue which has been postulated as the morbid anatomy of the epileptic brain. The idea is, however, within the scope of possibility.

In the meantime a new question in Roentgen analysis of the epileptic cranium has arisen: what rôle the ductless glands play in the development and continuance of epilepsy itself, and particularly the pituitary gland. The remarkable impetus the whole subject of the function of the pituitary gland and the modifying influence which its abnormal functioning has on the rest of the body received great acceleration from the admirable work of Cushing in this special field. The interest in the different functions of the various glandular structures embraced in the pituitary has caused not a little inquiry about the bony envelope of the gland itself, the sella turcica. In such an investigation one must not neglect the commonness of variation in the epileptic cranium, a fact emphasized again and again in anthropologic studies of such individuals. Nevertheless many of us have noted rather remarkable changes in the posterior clinoid processes. They often hook over so as to nearly close the sella cavity; in a small clinical material of a score of cases now in my hands but three or four of this number present this pronounced sella

variation. It is, of course, impossible for one to say just what influence this bony variation may have on the posterior lobe function. Certain it is that the cases showing this condition of the sella present no physical abnormality or variation in the epileptic state different from those not possessing it. Two of my patients who showed marked alteration of the sella were given pituitary extract hypodermic medication without any apparent alteration of the epilepsy for the better.

One cannot help but think that any such empiric medication must come to naught, especially in view of the fact that one neither knows the real nature and pathology of the disease, nor the nature and function of the pituitary secretion. Even if the pituitary secretion were the proper one to be supplied in the epileptic state, any of the present methods of administration must be considered too crude in practice when compared with that by which Nature supplies the same secretion in daily bodily metabolism. This statement is true in spite of the much overworked parallelism of thyroid medication in cretinism and allied states of myxedema. Again, a pure and properly prepared pituitary extract of the posterior lobe is probably not on the market today.

THE QUANTITATIVE DAILY EPILEPTIC DISCHARGE

For some time I have been interested to determine and measure the amount of dynamic loss to the epileptic in his seizures, this to be measured by a quantitative scale in order that it may be chartered in a graphic curve. The idea is the more interesting when the epileptic attacks are frequent and vary in character so that the ordinary record, wherein single attacks are reported, is often misleading to one hastily viewing them. In many such cases I have employed a chart similar to the one shown here. We find recorded here by daily analysis the urine tests for albumin, indican scale, the total solids, urea, and the number of hours of exercises the patient indulges in. The seizure record is made in a graphic chart by giving a definite small percentage value to the slightest psychic episodes which the patient has and then gradually grading the severer attacks to the largest percentage for the grand mal attacks. By this scheme one gains a much clearer relationship of the amount of epileptic discharge that obtains than by the ordinary employment of numerals for the seizure attack. I hasten to add, lest some one may ask for the individual interpretation of the scheme, that I am not ambitious to say just what this chart proves in any causal relationships in the curves.

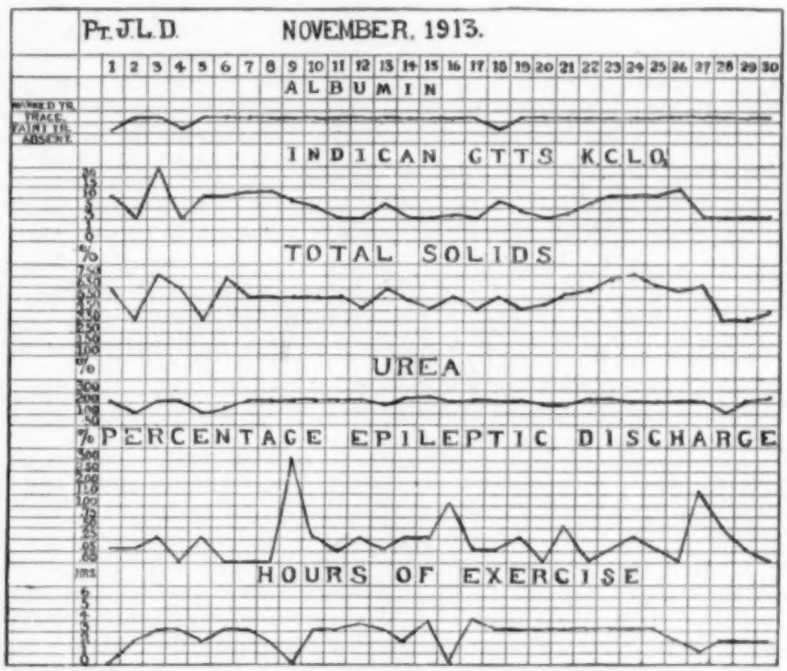

Pt. J.L.D.
NOVEMBER. 1913.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
ALBUMIN
INDICAN C.T.T.S. K.C.L.O.
TOTAL SOLIDS
UREA
PERCENTAGE EPILEPTIC DISCHARGE
HOURS OF EXERCISE

Chart showing a method of graphic tabulation of daily record of albumin, indican content, total solids, urea output of the urine, and hours of exercise contrasted to a graphic curve of the epileptic state in which the latter is estimated on a basis of percentage or scale. The slightest attacks, psychic in character, are given a value of 50 per cent., while the severest, grand mal attacks, are valued as 100 per cent. The method is of greatest use in recording epileptic states of maximum severity in which one or more attacks occur daily.

DIFFERENTIAL DIAGNOSIS

Since the interesting and perturbing advent of the psychanalytic school, epileptologists have experienced another partition of their clinical garment of epilepsy as an established disease entity. There has been a special rendition of the petit mal type. Out of this group more especially has been built up the so-called affect epilepsies, or better, the psychogenic convulsions of the neuropathic. It may seem surprising to many of the uniniated that inasmuch as the so-called genuine epilepsy is generally recognized as an organic disease, the psychogenic seizures should be in any way compared with the former. It largely goes to prove on what slender basis an organic disease entity may be postulated when its integrity depends on group symptoms or a syndrome without exact knowledge of its underlying pathology. I venture to say that even many skilled clinicians to-day depend largely on the description of the seizure type for a final diagnosis of the disorder. Only in a secondary way do they take cognizance of the primary epileptic constitution and the secondary deterioration of the malady as well as the physical stigma of the disease. It may seem that the latter statements appear superfluous, but it should be borne in mind that not a few of us have seen many institutional cases in their very beginning when the diagnosis has been by no means easy. In my institutional life with epileptics I often wondered why many treatises on epilepsy devoted so much time and space to the differential diagnosis of epilepsy; I have since learned better. Given a poor description of some sort of convulsive attack by an excited and distraught relative, one has need of the keenest intuitive powers and the most careful examination before making a certain diagnosis. To us extramural physicians, therefore, the advent of the psychogenic type of seizures is especially perturbing. While nearly all old text-books emphasized the infrequent but certain occurrence of epileptoid convulsions, and, indeed, even true attacks

emotionally induced in the otherwise frankly epileptic, these statements gradually lost place in modern works until to-day it reappears in many clinical studies almost like a new fact, that many attacks in epileptics are emotionally induced. For some time the situation has been made the most of by many quacks in dealing with many excitable and neurotic epileptics. Any one having much to do with epileptics, especially one living in close contact with them in colonies and institutions, daily witnesses true epileptic attacks psychically induced. Many types of peculiar seizures are also seen which are not epileptic at all but possess many characteristics akin to genuine hysteric convulsions. No two neuroses, any more than two organic nervous disorders, are mutually exclusive. A luminous essay might easily be made from a study of the various psychoneuroses seen in epilepsy. Many phenomena now classed as epileptoid or epileptic manifestations such as the epileptic twilight state, day dreams, temporary absences following emotional affects, frights, panics, distractions, pure phantasies and a notable criminal disposition shown in cruelties and assaults, may all be shown in part if not wholly to be due to outbursts of incompletely repressed affects. There can be no doubt that many such symptoms compared with the same occurring in pure psychoneurotics are in no respect dissimilar in manifestations or cause. Not a few of the so-called reflex and traumatic epilepsies of the past have been but thinly disguised psychogenic convulsions. One must bear in mind that in such cases the ordinary so-called stigmas of hysteria are absent, but even tongue biting and incontinence of the bowels and urine may occur and yet the disorder be psychoneurosis. I have seen two cases of the latter sort proved out by observation and treatment. However, true that in the majority of epileptics tongue biting and passing of urine in the attack may be good evidence for an organic or genuine epilepsy, one needs to remember that such symptoms *can* occur and the case not be one of epilepsy.

In the light of the foregoing it is easier now to make disposal of many reports of atypical and bizarre epilepsies, especially such as have been reported by Brush, Newmark and Sanger Brown. It is obvious, therefore, in a given case of epilepsy which shows none of the make-up of the epileptic constitution and no physical or mental deterioration from the malady, that one should consider such a case with the greatest care in the light of our knowledge of affect epilepsy or a psychogenic convulsant in a neuropath. One also should remember that a few cases of dementia praecox have epileptoid attacks. I meet such patients almost weekly. If time permitted I could cite many illustrations of the fact. At present I have no less than four cases of mixed types of convulsive attacks to diagnose differentially. In a brief statement it may be said that psychoneurotic episodes are differentiated from the ordinary types of so-called genuine epilepsy in that the former are symptomatic expressions of incompletely repressed and painful affects, having greater constancy, are often prevented or repressed purely by suggestion, may be displaced or prevented by psychanalysis and are usually unfavorably influenced by sedatives. The amnesic episodes are purely functional, and intelligence tests show no defects. The promptness and completeness by which the affect epilepsies may be cured make one wish that ordinary epileptic states were more frequently of this less grave nervous disorder. I attempt a partial analysis of every case of genuine epilepsy in the hope of removing many of the psychic elements that may act as irritants to the true disorder. It often fortifies the ground gained in the improved and arrested cases of epilepsy. Careful psychanalytic studies in true epilepsy are still to prove a mine of valuable and practical facts. It may yield data of practical points in treatment.

I wish to emphasize the great importance of establishing a central laboratory for research in convulsive disorders, the organization of which I made the basis of an address several years ago in the New Haven meeting of this association. Almost every other grave and wide-spread disorder which afflicts humanity by the thousands has had its special private or state endowment, and its laboratories busy in research. In the general study for the betterment of such human scourges as cancer, tuberculosis and insanity the cause of research into the nature and prevention of epilepsy seems to have lagged far behind. I am sure that no one thing would advance human welfare more than such a central laboratory for intensive research into the cause and prevention of epilepsy.

I trust the foregoing clinical exposition is of sufficient moment to warrant my further report on the several subjects at this time, and that it will be of sufficient interest to stimulate further clinical research into the still obscure clinical manifestations of this strange disease.

84 East Fifty-Sixth Street.

A CULTURE OF B. TUBERCULOSIS FROM THE BLOOD POST MORTEM OF A CASE OF MILIARY TUBERCULOSIS

H. K. FABER, M.D.
NEW YORK

A careful review of the literature on tubercle bacillemia has failed to show a single instance in which the tubercle bacillus has been grown from human blood. A few unsuccessful attempts to obtain such cultures are cited by Bergeron[1] in his review, which is dated 1904. Anderson[2] in 1909 made blood cultures from forty-eight cases of tuberculosis, all of which were negative. He was successful in obtaining three positive blood cultures from eight artificially infected rabbits, and this is the only recorded instance in which the tubercle bacillus has been cultivated from the blood of tuberculous subjects.

The reasons for such uniformly negative results are easily seen. Any one who has attempted to grow tubercle bacilli, even from material rich in organisms and uncontaminated, is familiar with the difficulty of getting the growth started. Complete aerobiosis, a carefully regulated temperature, carefully titrated mediums, and proper moisture are all necessary to induce Koch's bacillus to multiply on artificial soil. Cultures from the blood present several obstacles to the attainment of the above ideal conditions, chiefly the fact that the few organisms which might be present in the small amount of blood utilizable will in all probability be buried in a mass of red cells and fibrin if the blood is poured over solid mediums, and so be shut off from the access of oxygen in the air. Even should

1. Bergeron, André: Etude critique sur la présence du bacille de Koch dans le sang, Thèse 223, Paris, 1904.
2. Anderson, J. F.: The Presence of Tubercle Bacilli in the Circulating Blood in Clinical and Experimental Tuberculosis, Bull. 57, Hyg. Lab., U. S. P. H. S., 1909.

growth begin and a colony develop, it would be extremely difficult to find on the rough and heterogeneous surface of such a culture. Poured agar cultures and cultures in liquid mediums are open to a similar objection, namely, the conditions of partial anaerobiosis. The ideal method would seem to be to lake the blood in sterile distilled water, centrifugalize at high speed and spread the sediment over the surface of suitable solid mediums. The writer has twice attempted this method without success, but still believes it to offer the best chances of success.

The other main reason for previous failure is the fact that tubercle bacilli cannot be demonstrated in the blood by any valid method in more than a small percentage of cases of tuberculosis. Fraenkel[3] reviewed the whole subject very thoroughly in 1913, and after concluding that animal inoculation is the only safe test for the presence of tubercle bacilli in blood, compiled figures from the literature to show that about one hundred positive inoculations had resulted from five hundred experiments. He adds that many of these positive results are of questionable authenticity. In many instances the antiformin method had been used and the finding of acid-fast bacilli in tissues without gross tuberculous changes had been accepted as sufficient evidence of tuberculosis.[4]

It may therefore be of interest to compile the results of inoculating guinea-pigs with the blood of tuberculous patients and to note the number of cases in which the presence of the tubercle bacillus has been demonstrated by *gross* tuberculous changes in the test animals. Collecting the statistics embodied in papers[5] published in the last three years (1911-1914), I have found that the blood from 1,060 cases of tuberculosis was so tested and that forty-five of the guinea-pigs used showed gross tuberculous changes. These figures indicate 4.2 per cent. positive results, but the actual figure is undoubtedly even lower, because in many of the tests two guinea-pigs were used and in some instances, at least, both of them became infected.[6]

In view of this low figure it is clear that most attempts at cultivating *B. tuberculosis* from the blood are foreordained to failure. This is true particularly for cultures made *intra vitam*. With blood cultures made at necropsy, however, the outlook is more promising. Meisel[7] reported eight positive inoculations from eleven cases, and Seidenberger and Seitz[8] reported nine out of twenty-six, all the guinea-pigs showing gross changes. These figures, the only ones that I have been able to find bearing on this point, show 38 per cent. positive inoculations from blood taken at necropsy. It appears, therefore, that shortly before death tubercle bacilli appear in the blood stream either in greater numbers or with greater frequency than before this time.

Between February and July, 1914, blood cultures were made at the Babies' Hospital from twenty-one cases of miliary tuberculosis. Ten cultures were made during life, fourteen after death, and in three cases cultures were made both before and after death. The quantity of blood taken varied from 1 to 5 c.c. Of these cultures only the one here reported was positive. In one other case a number of acid-fast bacilli were found in the culture at the end of two weeks, but the growth—if it was a growth—failed to develop further and later the contents of the tube failed to infect a guinea-pig. In another case the numerous acid-fast bacilli found in the smear were shown to have come from distilled water used in making the preparation for microscopic examination. These experiences emphasized to the writer the dangers of purely microscopic diagnosis in tuberculosis and the absolute necessity of corroboration by animal experiments.

The patient from whom the positive culture was obtained was a white boy 2½ years old, whose tuberculous infection dated back about two months and was the sequel of an attack of whooping-cough. The diagnosis of tuberculosis was made during life and corroborated at necropsy. Cheesy bronchial lymph-nodes, extensive caseous change, with a cavity in an area of old bronchopneumonia in the left upper lobe, tuberculous ulcers in the intestine and miliary tuberculosis of the lungs, spleen, liver and kidneys, were the principal pathologic findings.

Blood was taken for culture in the following manner: After opening the thorax, the pericardium was slit with scissors and the edges folded back. An area of about 2 x 2 cm. over the right ventricle was carefully seared with a red-hot knife. The knife was again heated and immediately plunged into the heart cavity. A sterile pipet was introduced into the opening and a little over 1 c.c. of fluid blood was withdrawn and transferred directly to a plain agar slant. The tube was laid so that the blood covered the surface and, when the necropsy was completed, sealed with paraffin and laid in a similar position in the incubator.

This culture, not originally taken for the purpose of demonstrating tubercle bacilli, remained apparently sterile, and it was decided to keep the tube as part of a series of blood cultures from tuberculous patients, which was begun at this time. The tubes of this series

3. Fraenkel, E.: Nachweis von Tuberkelbacillen im strömenden Blut. Schmidt's Jahrb. d. Med., 1913, cccxvii, 317.

4. In view of the work of so many investigators (Brem, Walter V.: Investigation of Blood for Tubercle Bacilli, THE JOURNAL A. M. A., Sept. 18, 1909, p. 909. Von Lehmann, A.: Eine Fehlerquelle bei der Antiforminmethode, Deutsch. med. Wchnschr., 1913, xxxix, 1556. Holmes, E. B.: A Study of the Alleged Presence of Tubercle Bacilli in the Circulating Blood; Am. Jour. Med. Sc., New Series, 1910, cxxxix, 99. Kahn, E.: Zum Nachweis der "Tuberkelbacillen" im strömenden Blut, München. med. Wchnschr., 1913, cx, 345. Dreesen, H.: Ueber das Vorkommen von Tuberkelbacillen im strömenden Blute, Med. Klin., 1913, ix, 580.) proving that acid-fast bacilli are frequently present in distilled water and therefore in reagents made up with distilled water, it would seem that the time has come to reject the antiformin method and all other methods in which the diagnosis of tuberculosis is made from simple microscopic demonstration of acid-fast bacilli and to discard the results of previous experiments based on such methods.

5. Rumpf: München. med. Wchnschr., 1912, No. 36. Bernard, Debré and Baron: Recherches sur la bacillémie chez les tuberculeux, Bull. Soc. d'étude scientif. sur la tubercul., 1912, ii, 154. Querner, E.: Ueber Vorkommen von Tuberkelbacillen im strömenden Blut, München. med. Wchnschr., 1913, cx, 401. Bacmeister: Virulente Tuberkelbacillen im Blut nach der diagnostischen Tuberculininjection, München. med. Wchnschr., 1913, No. 9, p. 343. De Verbizier, A.: Nouvelles recherches sur la présence du bacille de Koch dans le sang circulant des tuberculeux, Rév. de méd., 1913, xxxiii, 161. Fraenkel, E.: Tuberkelbacillen im strömenden Blut, Deutsch. med. Wchnschr., 1913, xxxix, 737. Rist, Armand-Délille and Lévy-Bruhl: Sur la prétendue bacillémie des tuberculeux, Bull. Soc. d'études scientif. sur la tubercul., 1913, iii, 19. Rothacker and Charon: Das Vorkommen von Tuberkelbacillen im strömenden Blut, Centralbl. f. Bakteriol., 1913, cxix, 478. Elsaesser, J.: Tuberkelbacillen im Blutstrom bei Lungentuberkulose, Beitr. z. klin. Tuberk., 1913, xxvi, 367. Kachel: Ueber Tuberkelbacillen im strömenden Blut, Beitr. z. klin. d. Tuberk., 1913, xxviii, 275. Moewes and Brautigam: Tuberkelbacillen im Blute, Deutsch. med. Wchnschr., 1913, xxxix, 2031. Klopstock and Seligmann: Zur Frage des Vorkommens von Tuberkelbacillen im strömenden Blut, Ztschr. f. Hyg. u. Infectionskrankh., 1913, cxxvi, 77. Haas, W.: Ueber den Nachweis von Tuberkelbacillen im strömenden Blut bei chirurgischen Tuberkulosen, Beitr. z. klin. Chir., 1914, xc, 78. Storath, E.: Ueber Bedeutung und Auftreten virulenter Tuberkelbacillen im Blut nach der diagnostischen Tuberkulininjektion, Ztschr. f. Tuberk., 1914, xxii, 1. Mayer, A.: Ueber das Vorkommen von Tuberkelbacillen im strömenden Blut und in der menschlichen Milch, Ztschr. f. Tuberk., 1913, xxi, 447. Seidenberger and Seitz: Ueber das Vorkommen von Tuberkelbacillen im Herzblute bei chronischer und latenter Tuberkulose, Virchows Arch. f. path. Anat., 1914, ccxv, 89. Liebermeister: Deutsch. med. Wchnschr., March 13, 1913 (Discussion).

6. It has been objected that guinea-pig inoculation is not a perfect test for the presence of tubercle bacilli in tissues because one bacillus will not certainly cause infection. This is true. Nevertheless, since purely microscopic methods are not above suspicion, animal inoculation is at present the only satisfactory test. It is also very delicate since Selter (Vortrag auf d. Niederrhein, Ges. f. Nat. u. Heilk., Bonn, July, 1912, Discussion), as is well known, showed that ten bacilli almost certainly infect a guinea-pig.

7. Meisel, W.: Vorkommen von Tuberkelbacillen im Blute bei der allgemeinen Miliartuberkulose, Wien. med. Wchnschr., 1884, Nos. 39 and 40.

8. Seidenberger and Seitz: See Footnote 5.

were examined microscopically once or twice a week. In the process of examination the contents of the tube were scraped with the platinum loop and partly redistributed over the surface. This not only gave access of air to the bacilli present but probably formed a layer of serum on the agar surface in which the bacilli could multiply. It is certain that plain agar is not a suitable medium for initial cultures of the tubercle bacillus and the successful growth in this case must be attributed to some such fortuitous circumstance.

After two weeks' incubation two or three acid-fast rods were seen in smears from the culture but as these were not perfectly typical no transplants were made. When the culture was one month old a clump of acid-fast bacilli, consisting of about twenty organisms, was found. These looked much more like genuine tubercle bacilli but were so closely clumped that identification was not then clear. Transplants were now made to glycerin-veal-agar, blood-agar, coagulated egg and to tubes of the egg-broth medium recently devised by Besredka and Jupille. The last proved to be the most suitable medium and showed at the end of two weeks small crumb-like masses of acid-fast bacilli which were identical morphologically with genuine tubercle bacilli. Transplants were again made and the growth carried, in the same medium, to the fifth generation. Two cubic centimeters of a month-old culture in egg-broth belonging to the third generation were injected subcutaneously into the abdomen of each of two guinea-pigs. Four weeks later one of these died and showed a cheesy nodule at the site of inoculation, miliary tubercles of the inguinal lymph-nodes, tuberculous peritonitis, the great omentum rolled up and caseous and miliary tuberculosis of the liver, spleen and lungs. (Probably in this case the needle had pierced the peritoneum.) The second guinea-pig died five weeks after inoculation and showed enlarged, cheesy inguinal lymph-nodes, partly caseous retroperitoneal nodes and miliary tuberculosis of the spleen, liver, right kidney and lungs.

Smears made by rubbing portions of the spleens of these animals on new, clean slides showed innumerable acid-fast bacilli resembling in all respects genuine tubercle bacilli.

I regard it as a matter of good fortune that this culture, made on an unsuitable medium, should have been successful. The other attempts, as has been stated, all gave negative results. About fifty tubes and flasks in all were inoculated and several methods employed. Among these may be mentioned placing blood in shallow, broad-based flasks containing, variously, glycerin-beef-broth, glycerin-veal-broth without peptone or salt, and Besredka's egg-broth; and in slants or flasks of glycerin-beef-agar, glycerin-bob-veal-agar, coagulated egg and glycerin-blood-veal-agar. In two cases the hemolyzed and centrifugalized blood was spread on glycerin-veal-agar in large, wide-mouthed bottles. In all cases the containers were carefully sealed with paraffin, rubber caps or lead foil. Of the cultural methods named none seems satisfactory except the last. I hope that this method may be tried more fully and believe that it may yield a number of positive results, especially with cultures from the heart's blood at necropsy.

My thanks are due Dr. L. Emmett Holt for permission to publish this paper, and to Dr. Martha Wollstein for direction of the pathologic work.

Babies' Hospital.

RABIES

ITS DIAGNOSIS IN ANIMALS AND PREVENTION IN MAN

R. M. LECOMTE, M.D.

Instructor in Pathology, Georgetown University, School of Medicine; Pathologist to the Washington Asylum Hospital

WASHINGTON, D. C.

On account of the increasing prevalence of the disease,[1] and in view of the ease with which the general practitioner may administer the prophylactic measures at the home of the patient, even if he is situated at a place some distance from the laboratory which supplies the material for treatment, a brief consideration of some phases of rabies in their bearing on diagnosis and prophylaxis may not be out of order.

Diseases which are contracted by man solely from one of the lower animals afford better opportunities for effectual prevention than other infectious diseases; and when the animal concerned is a large domestic quadruped, the problem becomes easier in proportion to the simplicity with which the animal may be controlled. Rabies has been eradicated in the island of Great Britain, both in human beings and in animals, the measures adopted being merely the muzzling of all dogs and prohibition on the importation of canines except after a quarantine sufficiently long to prevent the admission of a rabid animal to the island. Unfortunately in the United States, owing to state laws, general muzzling of all dogs is impossible, and rabid dogs may pass from one state to another, spreading the disease so that eradication by this means seems impossible for the present at least. Since this is the case, it becomes the duty of each individual physician to familiarize himself with the nature of the disease and its prevention so that each may contribute his share toward diminishing the mortality rate among human beings.

Since rabies is transmitted to man almost entirely by dogs, knowledge of the characteristics and of the diagnosis of the disease in that animal is of more importance than the diagnosis in man himself. Clinically the diagnosis is seldom difficult when the disease is advanced. As Hutyra and Marek[2] state:

> The symptoms of irritation, the aggressive conduct and subsequent paralysis, particularly the appearance of bulbar paralysis, forms a very characteristic picture of the disease, and the diagnosis is made easier by the existing suspicion of infection. Statements that no bite has been received must be taken with reservation, as slight wounds are inflicted not infrequently without the knowledge of the owner. In making the diagnosis the former behavior and temperament of the animal must be taken into consideration.

Laboratory methods when properly performed are sufficient to make a diagnosis, but the work is greatly facilitated and correspondingly expedited if clinical evidence is at hand in addition, and therefore animals which are not manifestly rabid should not be killed as soon as they have bitten but should be confined for observation by a competent veterinarian. If the animal shows no symptoms in fourteen days[3] there is no danger of the person bitten contracting rabies from

1. Hart, George H.: Circ. 129, U. S. Dept. Agric., Bureau of Animal Industry, 1908. Mohler, John R.: Farmer's Bull. 449, U. S. Dept. Agric., Bureau of Animal Industry, 1911. Kerr, J. W., and Stimson, A. M.: The Prevalence of Rabies in the United States, THE JOURNAL A. M. A., Sept. 25, 1909, p. 989.

2. Hutyra and Marek: Pathology and Therapy of Diseases of Domestic Animals, translated by Mohler and Eichhorn, i, 483.

3. Hart, George H.: Circ. 129, U. S. Dept. Agric., Bureau of Animal Industry, 1908, p. 15.

that bite, while if symptoms appear or the animal dies from rabies within a week or ten days, the Pasteur treatment may be started at once without reference to laboratory diagnosis, although the latter may still be utilized to make the diagnosis doubly sure.

In man the disease is usually very readily diagnosed except in cases in which the bite has been overlooked at the time inflicted or forgotten shortly afterward. It is commonly divided into two stages of excitement and paralysis which follow one another in the order named but without strict regularity in this respect. When patients are seen with no history of having been bitten, the condition is frequently confused with other acute affections of the brain and meninges, and when the diagnosis is made previous to death, it is usually by the exclusion of other causes of irritation rather than from any pathognomonic symptom or symptom complex. The fear of water, which is due to spasm of the glottis from the laryngeal irritation occasioned by swallowing and the condition of general hypersensitiveness during the stage of excitement, or to choking from the entrance of fluids into the larynx during the paralytic stage, is quite characteristic. This spasm or paralysis of the laryngeal muscles also gives rise to the peculiar sound, resembling the barking of a dog when the patient attempts to speak. A positive diagnosis is probably seldom made until after death except in those cases in which symptoms follow a bite from an animal definitely known to be rabid.

A rapid diagnosis of the condition in the laboratory depends on the recognition of Negri bodies in the nerve cells of the brain of the animal.[4] While the accuracy of this method has been questioned,[5] and some still adhere to their views,[6] it is generally accepted among those most active in the work that Negri bodies are constantly present in rabies and absent in health and other diseases.[7] More recently Noguchi[8] has successfully cultivated these bodies and reproduced the disease with the cultures. Mohler[9] gives the results as 96 per cent. positive in rabid animals, presumably dogs.

Certain difficulties may arise in the laboratory examination as a result of lack of care in preparing the material. If the dog is killed early in the disease, the bodies may not have developed sufficiently either in size or number so that they may be recognized by our present microscopic methods. This difficulty would be almost completely eliminated were it not for the almost universal custom of killing any dog on suspicion as soon as he has bitten any one. As is noted above, he should be confined and observed for at least a week, during which, if he is infected with rabies, more definite symptoms than the mere defensive act of biting will develop. The only excuse for killing a dog immediately after he has bitten is in the case of an animal in the furious stage, when attempts at capture alive will in all probability lead to the infection of more individuals. A second difficulty arises from the appearance in the brain soon after death of artefacts which are indistinguishable from Negri bodies by microscopic methods, if the brain has not been properly cared for. It is with a view of diminishing the latter difficulty that the methods described in the section on preparation of material are suggested.

To further emphasize these two points, namely, the inadvisability of killing the dog early in the disease and the necessity for carefully preparing the material for shipment to the laboratory, it need only be recalled that when a human being has been bitten and the microscopic examination has been indefinite for either of the foregoing reasons, it is necessary to inoculate rabbits before the true state of affairs can be determined. Animal inoculation is practically useless for diagnosis in time to determine the necessity for preventive immunization, for characteristic symptoms seldom develop in animals in less than two weeks, and in order to insure the best results from the Pasteur treatment, it must be begun within the week following the bite. The physical discomfort and expense of this treatment, together with the suspense on the part of both the patient and physician until the results of the animal inoculation are known, surely justify the care in the preparation of the material necessary for a more rapid diagnosis.

PREPARATION OF MATERIAL

In hot weather and at all times of the year when shipment is to be made from points more than two hours distant from the laboratory, it is best to place the material in a clean metal can or box, to solder it shut to prevent leakage or contamination and to place it for shipment in the center of a box filled with ice. If the material can be delivered at the laboratory within two hours after the death of the animal, it is best to forward the head and neck with as little anatomic disturbance of the parts as possible. When shipping from points estimated to be more than six hours distant from the laboratory, in order to insure a diagnosis within a week, it is best to remove the brain, to bisect it in the middle line and place one-half in sterile glycerin and the other half in a 10 per cent. solution of formaldehyd gas. Although this method of preservation prevents the diagnosis from the fresh tissue, it will obviate difficulties arising from decomposition and bacterial contamination, and the part in formaldehyd solution can be readily manipulated so as to give a diagnosis within a week at most. When doing a necropsy on an animal suspected of having had rabies, the contents of the stomach should be noted, since the absence of food and the presence of foreign bodies is perhaps more characteristic of the condition than any feature which can be determined by macroscopic examination. Since the brain and other parts may be infectious, the necropsy should be done with care, and rubber gloves worn lest the operator be infected through small abrasions on the hands.

LABORATORY DIAGNOSIS

Material may be classified according to the methods which must be pursued at the laboratory as follows: first, material received without preservation; second, material which has been preserved either in hardening agents which kill the virus or in fluids which preserve the virulence but to a certain extent limit bacterial contamination of the virus. Unless material intended for examination while fresh is preserved from decomposition during shipment by cold, it is likely to be useless for microscopic examination, since, as was noted above, artefacts appear soon after death. While it is true that certain methods of staining are held to bring out the intracorporeal granules in the Negri bodies and thus

4. Negri, A.: Ztschr. f. Hyg., 1903, xliii, 507, and xliv, 519.
5. Keirle, N.: Studies in Rabies, Baltimore, 1909, p. 347.
6. Bloodgood and McGlannan: Practical Treatment, Musser and Kelly, Philadelphia, 1912, ii, 606.
7. Ravenel, M. P.: Modern Medicine, Osler and McCrae, Philadelphia, 1913, i, 959.
8. Noguchi, H.: Jour. Exper. Med., 1913, xviii, No. 3.
9. Mohler, John R.: Farmer's Bull. 449, U. S. Dept. Agric., Bureau of Animal Industry, 1911, p. 8.

distinguish them from artefacts, a stage of development is conceivable in which these granules may not be present in the parasite, and it is also true that the artefacts may appear to contain similar granules. Preserved material does away with the possibility of decomposition, and while it does not afford so rapid a method as the fresh material properly preserved, it will certainly enable a surer diagnosis to be made in a shorter time than if only decomposing brain substance is at hand.

Of materials which destroy the virus, a 10 per cent. solution of formaldehyd gas in water is probably the best, since it fixes well *en masse* and is usually more readily obtainable than other reliable fixing solutions. If it cannot be secured, a saturated solution of mercuric chlorid in alcohol, alcohol, or any of the commonly used fixing solutions may be used. Sterile neutral glycerin is probably the best fluid for retaining the virus in a fresh state, but if it cannot be obtained, sterile physiologic salt solution may be used.

The laboratory procedure available may be divided into two classes: first, the finding of the Negri bodies in the brain either in smear preparations or in cut sections, and second the inoculation of the brain substance into susceptible animals. Either of these procedures, if positive, is sufficiently characteristic of rabies to justify the Pasteur treatment, although on account of the time element, animal inoculation is seldom practiced for diagnostic purposes.

In some cases on account of decomposition, it is impossible to obtain sufficiently accurate results with the material received. When suitable fresh material is received, the diagnosis may be made rapidly from smear preparations of the brain tissue in the neighborhood of the hippocampus or from the cortex, where the cells which the parasites invade are most numerous. The tissue is spread in a very thin layer on a slide, fixed for a few seconds in neutral methyl alcohol, washed in distilled water, blotted and stained in the following solution:

Saturated alcoholic solution of basic fuchsin	0.3 c.c.
Saturated alcoholic solution of methylene blue	2.0 c.c.
Distilled water	30.0 c.c.

The slide may be stained for five minutes cold or flooded with the stain and heated over a flame until it steams. The excess of stain is washed off with water and the slide dried and examined with the oil immersion lens. Negri bodies are magenta colored and should be found within the nerve cell: red blood-cells are stained an orange red hue and the nerve cells are blue. This stain must be freshly prepared for it deteriorates rapidly. By their magenta color, the Negri bodies may be easily distinguished from red blood-cells lying on a nerve cell. Other methods of staining may be used and some give more elegant preparations; the foregoing is cited merely as an example because it is easily manipulated and has been found satisfactory in routine diagnostic and experimental work.

Cut sections are prepared in suspicious cases in which the smear method has given negative results and when only preserved material is received. Small pieces of the tissue are fixed by formaldehyd, dehydrated, cleared and embedded in paraffin: thin sections (5 microns) are cut and stained with the fuchsin-methylene blue stain used for smear preparations or by the eosin-methylene blue method. Important points to be observed are thorough fixation, thin sections and good differentiation. Thorough fixation can be secured by cutting the tissue into small pieces, thin sections by care in embedding and cutting and good differentiation by the use of colophonium in the alcohol used as suggested by Wolbach.[10] The Negri bodies are red and some may contain blue granules; red blood-cells have an orange-red color.

On account of the facility with which they may be controlled, rabbits are usually selected for inoculation with rabies. Some of the brain of the suspected animal, either fresh or preserved in some medium which does not kill the virus, is ground with sand and salt solution in a mortar with sterile precautions, thus forming an emulsion. The rabbit is anesthetized, the top of the head shaved, and the skin nicked just anterior to and a little to one side of the external occipital protuberance. The skull being exposed, a small hole is made into the cranial cavity (a small gimlet serves very well as a trephine), the needle of the syringe is inserted for about ¼ inch into the brain substance and a small amount of the emulsion injected. The nick in the skin is closed with a suture and the animal allowed to recover from the anesthetic. It is always well to inoculate several animals since death may occur from injury to the brain or by infection from bacteria contaminating the material injected before rabies has had time to develop. In positive cases the symptoms usually appear within two weeks, depending on the strength of the virus and various other factors, but before a case is reported as negative, three weeks without symptoms in the rabbit should be allowed to elapse, and search for Negri bodies in the brain be negative. In case of the death of the animal, Negri bodies should be recovered from the brain to confirm the clinical findings.

Other methods of injection than the intracerebral may be used, particularly if the brain substance is badly decomposed and obviously contaminated; but the lengthened period of incubation renders these methods of even less value than the intracerebral for diagnosis.

MANAGEMENT OF THE CASE

Any wound in which there is a suspicion that the animal inflicting it may have been rabid should be freely opened and thoroughly cauterized with fuming nitric acid. This procedure may not destroy all the virus present in the wound, but it will lengthen the period of incubation by reducing the amount of the virus left to be absorbed and will bring the possibility of failure in subsequent immunization to a minimum.[11]

The wound having been cauterized, the next step is to determine whether or not the animal inflicting it was really rabid. If the animal has been killed, the course of action should be governed by the distance to a laboratory where rabies diagnostic work is done, due regard being given to such preparation as will insure its arrival at that place without decomposition. If the animal is at large and furious, he will probably have to be shot, since any advantage to be gained by capture is not commensurate with the danger of exposing more persons to infection in attempts at the restraint of a manifestly rabid animal. If the animal is securely confined or can be secured with safety, it must be insisted that he be allowed to live until a diagnosis of rabies is made from the clinical features by a capable veterinarian who is sure of his ground. If no marked symptoms of the disease develop, he must be

10. Wolbach, S. B.: The Use of Colophonium in Differentiating the Eosin-Methylene Blue and Other Stains, The Journal A. M. A., Feb. 4, 1911, p. 345.
11. Ravenel, M. P.: Modern Medicine, Osler and McCrae, i, 969.

observed for at least ten days.[8] At the end of that time, he may be released or killed as the circumstances and value of the animal indicate.

Concerning the advisability of the Pasteur treatment, but little need be said. Failures are less than 1 per cent. in those receiving it, while in untreated cases developing rabies the mortality is 100 per cent. and is estimated at above 20 per cent. of all persons bitten by rabid dogs.[12] As may be discerned from this, not all persons exposed develop the disease, the probability of infection varying with the location and character of the wounds, with the susceptibility of the individual and with the amount and virulence of the virus. This, however, does not lessen the necessity for treatment, for of these factors, only one, the location and character of the wounds, can be determined immediately after the injury.

The physical discomfort and expense entailed make it advisable to secure definite information as to the exact nature of the condition of the animal before beginning the Pasteur treatment in the man, and this may be done by a little care in handling the case. The clinical diagnosis may be confirmed or a laboratory diagnosis made in any laboratory provided with a good microscope and the requisite reagents, provided the microscopist has had a little experience in preparing the slides and in recognizing the bodies. In the case of negative findings at inexperienced hands, it is well to have the work checked up by one who does the work regularly.

That there is ample time for this may be doubted; but the incubation period is from fourteen to one hundred days,[13] the average being about fifty,[14] and if treatment is started within one week after the bite has been inflicted, little fear of failure need be entertained.[15]

1730 M Street, N.W.

THE BACTERIOLOGY OF THE URINE IN TWO CASES OF PARENCHYMATOUS NEPHRITIS *

G. F. DICK, M.D.
AND
G. R. DICK, M.D.
CHICAGO

Recently[1] we published the results of the bacteriologic examination of a number of cases of scarlet fever. It was found that living organisms in considerable numbers gained entrance to the blood-stream in the acute stage of scarlet fever and were excreted in the urine. The suggestion was made that these organisms and their toxic products might be identical with the hypothetic toxic material so often spoken of as the cause of the nephritis occurring in scarlet fever. The following cases have a direct bearing on the idea of the infectious nature of the parenchymatous, or of the so-called non-suppurative, nephritis.

CASE REPORTS

CASE 1.—Man, 33 years of age, driver, gave a history of measles, chicken-pox, pneumonia, gonorrhea, and moderate indulgence in alcohol. The present illness of six weeks' duration was characterized by vomiting, headache and edema. The physical findings were general edema, ascites, apex in nipple line, blood-pressure 180 mm., and marked pyorrhea alveolaris.

The urine voided in twenty-four hours was about 1,000 c.c. It contained 2 gm. albumin. In the sediment were found finely and coarsely granular casts, red blood-cells, and a few polymorphonuclear leukocytes.

The clinical picture was that of acute parenchymatous nephritis.

Bacteriology.—Anaerobic cultures of a catheterized specimen of urine showed: (1) Gram-positive streptococci in pairs or short chains, growing better anaerobically and producing acid in dextrose and lactose without laking blood or acidifying milk or mannite. After several transfers, these organisms grew well aerobically and acidified milk; (2) spiral organisms of the type *Spirochaeta buccalis;* (3) very small Gram-negative bacilli which grew slowly anaerobically, forming transparent pin-point colonies on blood-agar without hemolysis. They formed acid in dextrose and lactose, and did not change milk or mannite; they somewhat resemble those described by Davis[2]; (4) Gram-negative bacilli which grew aerobically and showed barring, beading and clubbing, with irregular staining. They formed a moist, greyish film giving a faintly acid reaction in dextrose and slight hemolysis. In lactose, mannite and milk they effected no change.

Cultures from a second specimen of urine taken three days after the first showed the same organisms.

Examination of pus from the pyorrhea alveolaris showed: (1) Gram-positive streptococci in moderately long chains, growing both aerobically and anaerobically, forming acid in milk, mannite lactose and dextrose and producing no hemolysis; (2) spiral organisms resembling those found in the urinary cultures; (3) Gram-negative, biscuit-shaped extracellular diplococci, found in smear and not obtained in culture; (4) Gram-positive anaerobic bacilli with tapered ends which formed acid in milk, lactose and dextrose, and did not hemolyze blood or ferment mannite; (5) Gram-negative bacilli identical with Number 4 of the urinary cultures.

It will be seen that of the four organisms found in the urine, numbers 1, 2 and 4 were found in pus from the pyorrhea. It is reasonable to suppose that in this case organisms entered the blood-stream from the alveolar pus and were excreted by the kidney in a viable condition.

CASE 2.—Woman, aged 19, student, gave a history of diphtheria, chicken-pox, tonsillitis, appendicitis, pneumonia, two attacks of measles and two attacks of scarlet fever. The present illness of seven months' duration began with a tired feeling and gradual loss of appetite. Recently the patient has had nausea and severe headaches. Two months ago the urine was examined for the first time and albumin and casts found. Since then the urinary findings have remained unchanged. Physical examination showed the cardiac apex 8 cm. to left from mid-sternal line in the fifth interspace and blood-pressure 130 mm. The 1,250 c.c. of urine voided in twenty-four hours had a specific gravity of 1.008 and 1.2 gm. albumin. The sediment contained finely and coarsely granular and hyaline casts.

Bacteriology.—Anaerobic cultures of catheterized urine yielded: (1) Gram-positive streptococci in fairly long chains which had a slight hemolytic action and produced acid in dextrose and milk, without affecting mannite or lactose; (2) very small Gram-negative bacilli resembling in all respects those found in the urine of Case 1; (3) minute gram-negative cocci, forming brown or black colonies in anaerobic cultures and resembling those found in scarlet fever.[3]

These three organisms were present in the sediment of a freshly catheterized specimen and were also found in cultures made from a second catheterized specimen taken four days after the first.

12. Stimson, A. M.: Antirabic Virus, THE JOURNAL A. M. A., Jan. 22, 1910, p. 266.
13. Frazier, C. H.: Keen's Surgery, vi, 82.
14. Ravenel, M. P.: Modern Medicine, Osler and McCrae, i, 863.
15. Ravenel and Hammer: Wisconsin Med. Jour., 1911, ix, 565.

* From the Memorial Institute for Infectious Diseases and the Medical Department of St. Joseph's Hospital.

1. Anaerobic Culture in Scarlet Fever, Jour. Infect. Dis., 1914, xv, 85.
2. Davis: Jour. Infect. Dis., 1910, vii, 599.
3. Jour. Infect. Dis., 1914, xv, 85.

To Summarize: Two cases of typical non-suppurative nephritis with positive bacteriologic findings are described. In the first case, which was apparently an acute nephritis, it is probable that the portal of entry for the organisms was a pyorrhea; the bacterial flora of the urine corresponded closely with that of the pus from the gums. In the second, more chronic, case, the atrium of infection was not so clear, though the organisms found in the urine are commonly associated with diseased tonsils. Proof is wanting that the organisms found in the urine caused the associated nephritis. Davis,[2] however, found that in forty-two normal women the urine was sterile in thirty-eight cases and only a few organisms such as *B. coli* were present in the remaining four cases. The continued excretion by the kidney of organisms in quantities such as were found in these cases presents itself as the probable cause in some cases of parenchymatous nephritis.

TUMOR OF THE CRUS CEREBRI *

JOHN H. W. RHEIN, M.D.

Professor of Diseases of the Mind and Nervous System at the Philadelphia Polyclinic and College of Graduates in Medicine; Neurologist to the Howard Hospital; Physician to the Philadelphia Home for Incurables

PHILADELPHIA

Tumors of the crus cerebri are rare. In the collection of the brains in the neurologic laboratory at the University of Pennsylvania there is only one instance, a case of Dr. Spiller's, to which reference will be made later. There is also a second case of glioma of the pons extending to the crus. A careful search of the literature has been made and only a few cases have been reported. Under these circumstances it seems justifiable to report a single case.

M. S., aged 12, colored, was admitted to my service at the Philadelphia Polyclinic, Dec. 1, 1912. The family history was negative. There was no history of tuberculosis, syphilis or mental disease. Both parents and one brother were well. Her birth had been normal and the child developed normally, physically and mentally. As an infant she suffered from measles, chicken-pox and whooping-cough.

Two years previous to admission she had suffered from an attack of typhoid fever and in the previous summer had had a second attack which her parents stated was associated with malaria.

Two years previously she partly lost the use of her right arm and hand, and after an attack of typhoid malaria eighteen months later the right leg became weak. Two months ago there developed pains over the left eye which radiated to the left ear, and ptosis of the left eye. During the two weeks before admission to the hospital she had vomited every morning immediately after breakfast and had convulsions of the right side of the body lasting two or three minutes and recurring several times during the day. She was stuporous during the attack, but regained consciousness immediately after the twitching ceased. There has been for four months difficulty with the rectal and vesical sphincter, the latter consisting of difficulty in emptying the bladder.

On examination the patient was found to be a poorly nourished colored girl. The physical examination of the heart and lungs proved to be normal. The liver and spleen were not enlarged and there were no palpable masses in the abdomen.

There was paralysis of the right side of the face in the lower distribution of the facial nerve. The patient moved the left side of the face and both sides of the forehead well and closed both eyes equally well. There was some rigidity of the neck when rotary or to-and-fro movements of the head were made. The pupils did not react to light or in accommodation. In making an effort to follow an object to the right the right eyeball did not move beyond the median line and the left eyeball moved only a slight distance to the right. In following an object to the left the right eyeball moved to the inner canthus and the left eyeball remained motionless. In following an object upward neither eyeball moved at all. In following an object downward the right eyeball moved only slightly and the left eyeball not at all.

The tongue protruded markedly to the right. The patient winced when the face was scratched with a sharp point on both sides. The finger to nose test showed marked ataxia on the right side and slight on the left.

In the right arm there was marked contracture of the biceps muscle which caused flexion of the forearm on the arm. She could not voluntarily extend the forearm. The grasp of the right hand was almost nil and was feeble on the left side. Rotary movements of the right arm could scarcely be made at all. The left arm was feeble but all movements were possible. There was no diadokokinesia. In walking she dragged the left leg, although both legs appeared to be weak.

Both knee-jerks were exaggerated and equal. There was no ankle-clonus, but the Babinski sign was present on both sides. The toes on both sides were hyperextended, especially on the right. Weakness of the legs prevented a satisfactory test for diadokokinesia. An examination of the eye by Dr. Zentmayer showed intense swelling of the nerve-head and surrounding retina with a few scattered hemorrhages. Later the pupils became unequal, the right being smaller than the left and the left eyeball protruded more than the right. A diagnosis of tumor of the upper part of the pons was made.

Necropsy.—The left crus cerebri was very much enlarged and extended to the right of the median line. On section it was found that the enlargement was due to a caseous tumor which extended to the upper limit of the pons below and the basal ganglia above. The internal capsule was somewhat implicated in its anterior limb and the optic thalamus was also apparently involved in its anterior third. The focus in the pons extended to the opposite side to a slight degree. There was also a small focus of circumscribed caseation in the white matter of the frontal convolution on the left side situated half an inch to the outside of the caudate nucleus. On microscopic section the tumor proved to be a tubercle.

Summary.—In a girl of 12 there developed gradual loss of power in the right side of the face, the right arm and leg, left sided ptosis and convulsive seizures confined to the right face, arm and leg. Later paralysis of associated movements upward and downward, and laterally, and finally weakness of the left arm developed. The symptoms were caused by a tubercle of the left crus cerebri which invaded the upper part of the pons, affecting the nuclei of the third nerve and extending upward into the basal ganglia. The paralysis of associated movements upward and downward and laterally indicated a lesion of the pons in the neighborhood of the oculomotor nuclei, and a lesion of the posterior longitudinal bundle.

To the diagnostic value of these symptoms Spiller has already called attention. It was the presence of the paralysis of associated movements which led to a diagnosis of tumor of the pons in this case. The extent of the tumor was not suspected during life. Indeed, I know of no way to differentiate between tumors of the crus and of the upper part of the pons.

It is not a surprising observation to find the two associated, to which the cases of Touche,[1] Sharkey,[2] Mann and Delépine[3] and Hun[4] will testify.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Touche: Neurol. Centralbl., 1902, xxi, 42.
2. Sharkey: Brain, London, 1894, xvii, 238.
3. Mann and Delépine: Brain, 1898, No. 21, p. 475.
4. Hun: Jour. Nerv. and Ment. Dis., 1887, xiv, 624.

Obviously the more caudal the lesion the more apparent it becomes that the lesion affects more than the crus.

When the lesion extends upward and involves the external geniculate body or implicates the optic tracts, there intervenes hemianopsia and hemiopic pupillary inaction. Motor ataxia or sensory disturbances indicate extension of the lesion to the tegmentum.

In a review of the literature only seventeen cases of tumor of the crus cerebri were found in which the diagnosis was verified by necropsy.

Sanz[5] reported a case of a child of 8. The right arm and leg were paralyzed and contractured and there was left ophthalmoplegia. To these symptoms were added delirium, fever and later right ophthalmoplegia and bulbar disturbances. The necropsy revealed a single tubercle in the left cerebral peduncle. Both peduncles were softened as well as the pons and medulla. There was some meningeal reaction.

Hunt[6] described a case of a boy of 17. A month after an injury to the head there developed strabismus and ptosis of the right eye followed by weakness and stiffness of the left arm and leg. There was somnolence, vertigo and inordinate laughter on slight provocation and sometimes spontaneous. There was no headache, nausea or vomiting. There was complete ptosis of the right eye, partial of the left, divergent strabismus on both sides, and paralysis of the upward and downward and inward movements of the right eye. The inward and downward movements of the left eye were also limited in their excursion. Some nystagmoid movements were present. The pupils reacted normally but sluggishly. The disks were congested and the upper margin was hazy.

The left side of the face, arm and leg were paralyzed and spastic. Ankle-clonus and the Babinski phenomenon were present but no objective sensory disturbances. The skin reflexes were absent on the left side. There was uncontrollable and involuntary laughter from time to time. The tongue deviated toward the left. Later there were involuntary urination and defecation. The motor portion of the fifth nerve was paralyzed on one side, the jaw deviating toward the right side.

At the necropsy was found a tumor extending from the right crus cerebri. It was a firm, nodular, grayish-white mass in appearance filling up the interval between the cerebral peduncles. The right third nerve was compressed and atrophic. There was also a cyst springing from the floor of the fourth ventricle measuring 1¼ inches by ⅝ inch. It dipped down into the substance of the pons and passed beneath the aqueduct and appeared on the inferior aspect of the right crus cerebri, where it became adherent to the tumor. Degenerative changes were found in the medulla and pons. The tumor in this case proved to be a glioma.

Henoch[7] reported a case of tuberculosis in a child of 3 who died twelve weeks after the onset of the symptoms. There was first tremor of the left hand, arm and leg. The fingers were held in a flexed position and there was right-sided ptosis, dilatation of the right pupil and external strabismus. Later there was ptosis, mydriasis and strabismus of the left eye. Death ensued as a result of measles and bronchopneumonia. A tumor the size of a cherry was found on the right cerebral peduncle extending into the third ventricle. The right third nerve was flattened, thin and discolored. There was also a tuberculous area in the apex of the left lung.

Garnier[8] described a case in a man of 65. The head and eyes deviated to the right and there was complete right-sided hemiplegia with slight rigidity. The temperature was lower on the left side. The patient died one hour and a half after admission.

A small ovoid tumor was observed on the right cerebral peduncle, which proved to be a lipoma. It was adherent to the base of the cerebral peduncle but it did not look as if it were the cause of the compression of that organ, the hemiplegia being probably due to a cerebellar hemorrhage which was also present. He stated that only thirty instances in the literature were found of lipoma in the central nervous system. These tumors originate in the meninges or their vicinity.

D'Astros and Hawthorn[9] cited a case of tubercle of the cerebral peduncle in a girl of 21 months. The symptoms began at 10 months of age after some digestive troubles. There developed trembling of the left hand and arm, some photophobia, right oculomotor paralysis characterized by ptosis, external strabismus with immobility of the eyeball and partial mydriasis with sluggish reaction of the pupil. There was paresis of the left side of the face but no involvement of the fifth nerve.

A conspicuous symptom was the rhythmic tremor of the forearm consisting of an oscillatory movement from side to side and forward and backward. The left leg was paralyzed and spastic. There was also some alternating flexion and extension of the muscles of the left leg. There was no Babinski sign. The patellar reflexes were exaggerated on both sides.

The patient died about twelve months after the onset of the disease. There was besides tuberculosis of both lungs a caseous tubercle, the size of a cherry about 2.5 mm. below the protuberantia and extending forward to the wall of the third ventricle. It occupied almost the entire upper portion of the right peduncle. He also cites the case of Raviard and Asset in which there was a tremor on the right side with left-sided ocular motor paralysis due to the large peduncular tubercle.

Blocq and Marinesco[10] described a case exhibiting a tremor like paralysis agitans which was confined to one side, in which there was a tumor of the cerebral peduncle, occurring in a man of 42. The first symptoms consisted of swelling and stiffness of the left side of the face, the eyes and tips of the fingers of the left hand. This rigidity progressed and at the end of a year and a half, tremor began. On examination the expression was Parkinsonian. There was a rhythmic tremor of the left hand and leg controlled for a short time by the will. The body was bent forward in walking and there was a slight tendency to stumble to the left. Transitory diplopia was noted. The left patellar reflex was exaggerated. No sensory change except subjective tickling of the left hand was noted. A diagnosis of unilateral Parkinson's disease was made. At the necropsy there was a tuberculous lesion found in the thorax and lumbar vertebrae. The right cerebral peduncle was enlarged and the seat of a tumor the size of a nut. There were no degenerative lesions.

5. Sanz: Rev. Espagne Med. y Cirur. Práct., 1908, lxx, 39.
6. Hunt: Am. Jour. Med. Sc., 1904, cxxvii, 514.
7. Henoch: Vorlesungen über Kinderkrankheiten, Berlin, 1903, Ed. ii, p. 270.
8. Garnier: Rev. méd. de l'est., 1902, xxxiv, 590.
9. D'Astros and Hawthorn: Rev. Neurol., 1902, x, 377.
10. Blocq and Marinesco: Compt. rend. Soc. de biol., 1893, v, 105.

Pepper and Packard[11] described a case of glioma of the right crus cerebri in a boy 4 years of age. There was left-sided facial and corporal hemiplegia. The tongue protruded to the left and there was transient involvement of the left extrinsic ocular muscles. There was a marked contracture of the arm but none of the leg and there were no headaches, sensory disturbances, hemianopsia or paralysis of the masticatory muscles. Death followed convulsions. At the necropsy there was a tumor the size of a hazelnut seated at the outer and under surface of the right crus cerebri. The microscopic examination showed it to be a glioma.

Benedikt[12] cited a case of a boy of 4 who suffered from headache for six weeks before applying for treatment, at which time there was right-sided ptosis and oculomotor palsy of the same side. The head was turned toward the left and the chin toward the right. There was a tremor of the left hand and leg, which were paretic. The muscles of the lower lip were paralyzed, deviating toward the left. At the necropsy there were a number of tubercles found in the left frontal lobe, in the marginal convolutions, in the cuneus, and in the left cerebellar hemisphere. Finally a tubercle the size of a pigeon's egg occupied the inferior surface of the right cerebral peduncle. This tumor destroyed the right oculomotor nerve. He also cited a second case in a man with pulmonary tuberculosis presenting crossed oculomotor paralysis and hemiparesis with tremor of the paralyzed members.

Kraft-Ebing[13] described a case in a woman of 41 with tubercle of the right cerebral peduncle. The first symptoms consisted of heaviness in the legs associated with habitual headaches, right-sided tinnitus aurium, vertigo and weakness in the right arm with drawing pains in the right arm and leg. Diplopia and bilateral ptosis developed later and there was paralysis of the superior rectus muscles with pronounced right-sided papillitis. The deep reflexes were enormously exaggerated on the left side and there was right-sided hyperalgesia. There was persistent left hemiataxia. Death ensued at the end of three months. The necropsy revealed a tubercle 13 by 11 mm. in size occupying the entire tegmental nucleus. There was general tuberculosis.

Mendel[14] presented a specimen of tubercle from the brain of a child of 4 years and 9 months of age. The first symptoms consisted of an intention tremor of the right arm which later was followed by a weakness of the right leg, left-sided ptosis and paralysis of the right externus with dilation of the left pupil, which was twice as large as the right. The right side of the mouth appeared paralyzed, the face being drawn toward the left. The tongue protruded toward the right and the right neck-muscles were paralyzed. The right arm also was paretic. Sensation was not implicated. The temperature of the right arm and leg was, however, reduced. A large tubercle measuring 2 by 1.25 cm. was found in the left peduncle. The red tegmental nucleus of the superior peduncle seemed to be completely destroyed. Anteriorly the tumor extended to the left corpus subthalamus. There was some circumscribed meningitis in the interpeduncular space, which would explain the right-sided ocular motor paralysis.

Ramey[15] described a case of alternating paralysis of peduncular origin in a man of 52. Following occasional transitory sensation of tingling in the right foot, there followed a gradual paralysis of the right arm, leg and face. The knee-jerks were exaggerated on both sides. There was some diminution of sensation of the right side and the temperature was much lower than that on the other side. There was paralysis of the left third nerve, including the iris and the ciliary muscles. The right eye showed paralysis of the inferior, superior and external muscles. There was considerable contraction of the fields of vision. The necropsy revealed the presence of a miliary tuberculosis of the lungs. The left peduncle was larger than the right and was the seat of a tumor consisting of an agglomeration of eight to ten small yellowish masses.

Proust[16] cited a case of tumor of the right cerebral peduncle in a man of 32 who two years prior to coming under observation developed headache, vertigo and deafness. Three months previously there gradually developed an incomplete hemiplegia of the left side involving the face. The left forehead appeared much less wrinkled than the right. The left eyelid was opened less easily than the right and protruded more than the right. The pupil was dilated and there was some strabismus. There was some slight diminution of sensation of the left side. He emitted from time to time piercing cries. There was no vomiting, loss of consciousness or convulsions. At the necropsy a tumor the size of an egg was found occupying the right cerebral peduncle. There was distention of the right lateral ventricle. The peduncle was completely flattened.

Ria[17] added a case of a glioma of the left cerebral peduncle in a man of 33. The first symptoms consisted of a slight weakness of the right hand and a month later there developed weakness of the right leg and in still another month difficulty in speech. Later there was ptosis of the left upper eyelid. Tactile, pain and heat sensations were only a trifle below normal. The left pupil was dilated and there was external strabismus. At the necropsy a tumor the size of a nut was found in the left peduncle which extended to the optic thalamus and affected the corpus striatum. It also involved the left large ventricular ganglia. Under the microscope the tumor proved to be a glioma.

Archambault[18] presented a case of complete paralysis of the right ocular motor nerve and incomplete left hemiplegia in a child of 3 years of age. At the necropsy there was a tuberculous tumor the size of a nut in the right cerebral peduncle a little in front of the third ocular motor nerve. There was also a tuberculous lesion of the lungs.

Bouveret and Chapotot[19] described a case of a woman of 22 who awoke with weakness of the left side which was shortly followed by oculomotor paralysis and frequent headaches which were associated with vomiting and vertigo. Two months later there was partial paralysis of the left side of the face and complete left hemiplegia. Sensation to heat and cold was lowered on the left side. A slight ptosis of the right side was observed, but all the muscles of the left eye were more or less involved. The left pupil was larger than the right. There was incipient optic neuritis. About a month later there were left-sided convulsions

11. Pepper and Packard: Am. Jour Med. Sc., 1890, cxix, 263.
12. Benedikt: Bull. Med., 1889, iii, 547.
13. K aft-Ebing: Wien. klin. Wchnschr., 1889, ii, 896.
14. Mendel: Berl. klin. Wchnschr., 1885, xx, 468.
15. Ramey: Rev. de méd., 1885, v, 489.
16. Proust: Progrès méd., 1882, x, 187.
17. Ria: Ann. clin. d'Osped. Incur., 1885, v, 82.
18. Archambault: Progrès méd., 1877, v, 718.
19. Bouveret and Chapotot: Rev. de méd., 1892, xii, 728.

and about two weeks after this there was paralysis of the right third nerve and dilatation of the right pupil. Choreiform movements followed shortly after this. The patient died six months after the onset of the symptoms. At the necropsy there was discovered tuberculosis of the lungs. A cherry-sized caseous mass was found at the junction between the gray and white substance at the base of the second frontal convolution of the left side. Both peduncles were the seat of a tuberculous tumor. On the right side the tumor projected toward the occipital horn of the lateral ventricle and extended under the aqueduct of Sylvius, where it destroyed the gray matter.

Beck[20] reported a case of hard round-cell sarcoma in the left crus in a male. The first symptoms were attacks in which he would feel weak and experienced a sudden sensation of shock which caused the head and upper part of the body to bend forward and which was associated with vertigo. He also suffered from severe frontal headache. On examination there was found diplopia, the right pupil was smaller than the left, which did not react at all to light, and there was convergent strabismus in the right eye, the left eye remaining stationary. The ophthalmoscope showed a fulness of the veins. The right facial nerve was slightly paralyzed. The tongue protruded straight and there was no speech disturbance. The movements of the right arm and leg were much slower than on the left and the patellar and Achilles reflexes were exaggerated. Two months later there developed complete ptosis of the left side and a slight ptosis of the right. The left ocular muscles were paralyzed with the exception of the rectus externus. All symptoms became aggravated until death about six months after applying for treatment. At the necropsy a spherical tumor was found measuring 1.5 by 2 cm. situated in the left cerebral peduncle and reaching as far as the ganglia. The oculomotor nerves were flattened by the pressure from the tumor.

Enlargement of left crus cerebri.

Spiller[21] described a case in a man of 48 years of age who had paralysis of upward associated ocular movements with loss of convergence. The downward movement was difficult, while the lateral movements were intact. The speech was bulbar in character and there was dysphagia associated with constant dribbling of saliva. He complained of headache, extreme vertigo and uncontrollable spells of laughter. Later all associated ocular movements became impaired and there was slight ataxia of the arms.

At the necropsy there was found a tumor of the right cerebral peduncle which measured 2 by 5 mm. and consisted of a sarcoma, possibly endothelioma. The lowest portion of the tumor was at a point where the fibers of the oculomotor nerves leave the nuclei in large bundles and it extended toward the aqueduct almost to the lowest part of the oculomotor nucleus. A few fibers of the right oculomotor nerves passed through it. Posteriorly the tumor extended a little beyond the aqueduct of Sylvius.

The characteristic symptom complex of tumor of the crus cerebri is said to consist of a hemiplegia on the opposite side to the lesion associated with oculomotor palsy on the same side. This has been termed hemiplegia alterans superior. But in fourteen of eighteen cases collected from the literature and including my own, the hemiplegia was associated with oculomotor palsy on both sides in nine instances (Hunt, Henoch, Kraft-Ebing, Mendel, Rhein, Ramey, Bouveret and Chapotot, Beck, Benedikt) and only in five cases was the oculomotor paralysis unilateral (Sanz, d'Astros and Hawthorn, Benedikt, Ria, Archambault). The close proximity of the two nuclei of the third nerve explains the frequency of the involvement of the oculomotor nerve on the opposite side. In rare instances the paralysis and oculomotor palsy may be on the same side. Farnell and Burnett described such a case but there was no necropsy. In Pepper and Packard's case with necropsy the hemiplegia and third nerve palsy were on the same side.

The hemiplegia is gradual in onset and is usually associated with spasticity.

In some cases a tremor or choreiform movements are present. In the cases cited in this paper this symptom was present in eight instances (Henoch, d'Astros and Hawthorn, Bouveret and Chapotot, Raviard and Asset, Blocq and Marinesco, Benedikt (two), Mendel). In d'Astros and Hawthorn's case the tremor consisted of a rhythmic tremor of the forearm in which the movements were from side to side and forward and backward. In Bouveret and Chapotot's case the tremor was choreiform in character. In the case described by Blocq and Marinesco the tremor was like that of paralysis agitans. Also in the two cases cited by Benedikt there was a tremor of the paralyzed limbs. In Mendel's case an intentional tremor of the right arm was the first symptom. The tremor must be looked on as an irritating symptom due to pressure on the pyramidal tracts.

Hemiataxia has been noted, as in the cases of Kraft-Ebing and Spiller. Ataxia was present in both arms in the case cited by myself in this paper.

In rare instances palsy of the opposite limbs may be observed, when according to Oppenheim[22] dysphagia and dysarthria may occur.

20. Beck: Virchows Arch. f. path. Anat., 1883, xciv, 378.
21. Spiller: Jour. Nerv. and Men. Dis., 1905, xxxii, 497.
22. Oppenheim: Spec. Path. u. Therap., Nothnagel, Wien., 1896, ix, 125.

Sensory disturbances are present in some cases consisting of contralateral hemianesthesia. Parasthesia and hemihyperesthesia have occurred.

Reduction of the bodily temperature on the paralyzed side has been noted in some cases (Garnier, Mendel, Ramey). This possibly may be referred to vasomotor disturbances due to implication of the substantia nigra. Inordinate laughter occurred in two cases, namely, those of Spiller and Hunt. Of the eighteen cases, twelve were tuberculous tumors (Sanz, Henoch, d'Astros and Hawthorn, Blocq and Marinesco, Benedikt (two), Kraft-Ebing, Mendel, Ramey, Archambault, Bouveret and Chapotot, Rhein). In one the tumor was a lipoma (Garnier), in three cases glioma (Pepper and Packard, Ria, Hunt), and finally, in two cases the tumor was a sarcoma (Beck, Spiller).

1732 Pine Street.

IDIOSYNCRASY TO ORTHOFORM

T. C. McCleave, M.D., Berkeley, Cal.

Some months since, a few hours after partaking of soft-shell crab at dinner, a patch of urticaria appeared on the arm, gradually spreading over the body until at the end of twenty-four hours, the entire trunk and head were involved. Curiously, at no time did the eruption go below the waist nor were the hands involved. The skin of the affected parts finally was of a dusky red color, with a sprinkling of darker areas closely resembling the eruption of measles. There was a uniform brawny thickening of the skin, which on the face produced a most grotesque distortion of the features and rendered it difficult to open the eyes and mouth. During the first thirty-six hours there was some fever and a tendency to stupor, with great prostration. Itching was intense. The condition persisted some five or six days, and gradually subsided, but for several weeks the skin showed a bronze discoloration and desquamated in fine scales.

It seemed clear that the attack was an anaphylactic reaction to some protein, presumably, of course, from the crab.

No significance was attached to the use, during the preceding week, of very small amounts of orthoform in the cavity left after the extraction of a molar tooth.

Three months later, however, the application of 10 per cent. orthoform ointment to a traumatism of the tongue was followed in a few hours by symptoms identical with those above described, except in lesser degree, as the etiologic relation of the orthoform was at once recognized and the drug withdrawn.

The occurrence of transient papular eruptions after the use of orthoform has been reported, but it is ordinarily regarded as free from toxic dangers, and in some conditions, as cancer and ulcer of the stomach, has been used in large dosage. My personal experience, here reported, indicates, however, that it cannot be used with impunity in all persons, even in very small dosage.

Berkeley National Bank Building.

The Good Doctor Is All of These.—We cannot agree exactly on what a "good doctor" is. Some will say "Practical"; some will say "Scientific"; some will say "Knowledge"; some will say "Heart."—Lyon.

New Instruments and Suggestions

THE INDIA-INK METHOD OF EXAMINATION OF SPIROCHAETA PALLIDA

William A. Walters, M.D., Billings, Mont.

This method has been described in detail from time to time, and in the majority of cases in which India ink has been used as a means of detecting the *Spirochaeta pallida*, a prepared waterproof India ink has been recommended.

The method usually described is to obtain a specimen from the suspected lesion; a drop of this is placed on a glass slide, an equal amount of prepared India ink is added and the mixture is smeared fairly thin.

It has come to my attention in using this method that the secondary organisms were usually abundant and that the field in every instance showed a striking similarity of these secondary organisms. On comparing the slides of the same case made by the prepared India ink and the field seen with the dark-ground illuminator, it was noted in every instance that many more organisms could be identified with the India ink than with the dark-ground illuminator.

These two apparently dissimilar results obtained on the same patient with the prepared India ink and the dark-ground illuminator caused me to compare the methods carefully. It was thought that the ink itself might contain these organisms, and working along these lines a drop of prepared India ink was smeared on a clean slide and examined. It was found that the ink itself contained myriads of organisms, many of them long and filamentous, having a wavy contour not unlike that of the spirochete. There were also many other long rod-like organisms present. An examination of the accompanying photomicrograph will illustrate this point.

Photomicrograph of a specimen of prepared India ink; Reichert ⅛-inch objective; No. 4 ocular; tube length 160 mm.

A number of other bottles of India ink were examined and almost every bottle contained the same character of infection. It is evident that in the manufacture of this ink the contamination is almost identical in every instance. At least I believe that prepared India ink is unreliable as a means of determining the spirochete.

To obviate these artifacts a dry stick of India ink was obtained and rubbed with a small amount of filtered water. This was spread on a slide and examined and no micro-organisms could be found.

My method is to rub the dry stick of India ink with two or three drops of filtered water in the bottom of a small mortar. The filtered water can be obtained at almost any soda-fountain.

No pestle is used in this operation. The stick itself is simply rubbed against the bottom of the mortar as the pestle would be used in triturating. This India-ink solution is then added to an equal amount of material obtained from the suspected lesion and smeared carefully over the surface of a clean slide. A little practice will enable one to judge the proper thickness of the smear. If it is too thin the organisms are not seen well; this is also the case if the smear is too thick.

Most stationers handle slate ink-slabs which draftsmen use in rubbing up the sticks of India ink. They are very convenient, and they can be procured at a comparatively small cost.

This method, while a little slower and less convenient than with the prepared solutions of India ink, is far more accurate and will obviate all secondary organisms of the microscopic field.

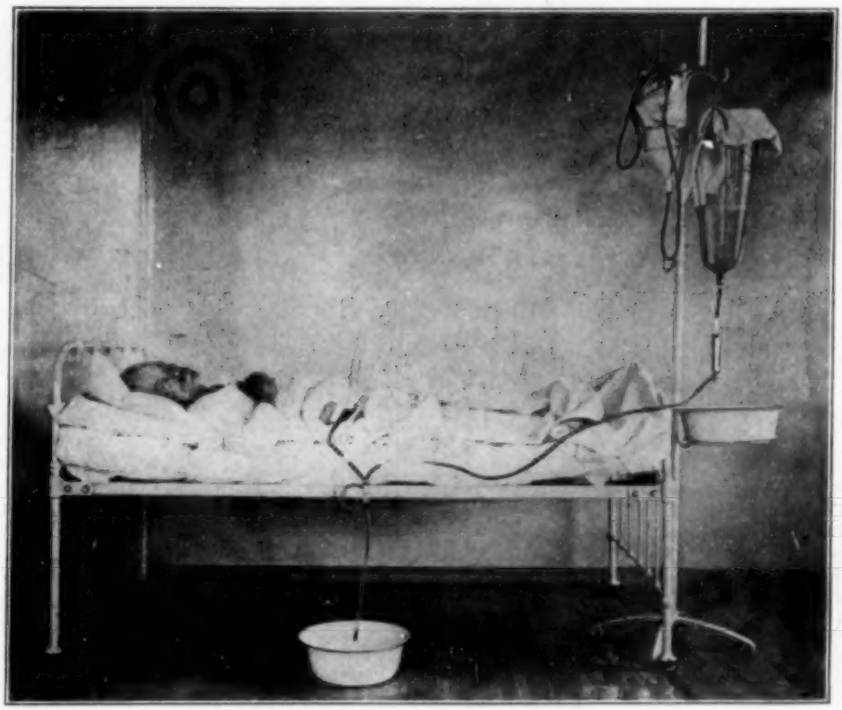
SUPRAPUBIC PROSTATECTOMY WITH SPECIAL REFERENCE TO DRAINAGE

LUCIAN W. SMITH, M.D., LAFAYETTE, IND.

Although suprapubic prostatectomy has increased in popularity in recent years, the problem of satisfactory bladder drainage has remained a discouraging feature. In my own experience this objection has been eliminated by a plan which the accompanying illustration will assist in explaining.

The customary large drainage tube with fenestrated end is secured in the bladder, extending about 1 inch into the viscus and emerging at the upper end of the skin incision. It is important to know the exact length of this tube in order to place properly within it a smaller tube which should reach only to the fenestrae of the drainage tube. This smaller tube acts as a siphon and with certain modifications to be described extends to a receptacle beneath the bed and terminates in a glass tube which is tipped with a rubber bulb from a medicine dropper. A slit in the end of this bulb converts it into a valve which prevents ingress of air with its displacement of water within the tube.

About level with the bed-rail the siphon-tube is thrown into a circular loop having a diameter of about 3 inches, and fastened with adhesive plaster. Immediately above this point the tube is joined by another, leading from a reservoir which is placed somewhat higher than the bed. Water slowly flowing from the reservoir is regulated by a suitable valve and fills the circular loop at brief intervals. Each time the loop is filled to overflowing its contents fill the tube below the loop and start the siphon, which draws from the bladder any fluid that may be within reach, after which the vacuum is relieved by air which finds its way into the drainage-tube. This air is carried along with the fluid, and its passage through the tube, with the sound of its escape through the valve, is a sure indication that everything is working properly. This sound does not annoy, but is a source of satisfaction to the patient who knows that while it continues his bed will remain in a dry condition.



Author's apparatus for suprapubic drainage in use.

If the tube is obstructed by a clot, the passage of air will cease and the difficulty is at once apparent. A clot may be easily removed by compressing the tube with one hand, then grasping it at a more distant point with the other, so that when the compression is removed a partial vacuum is formed which causes the clot to be held by air pressure in the end of the tube, with which it may be withdrawn. A section of glass in the siphon-tube near the patient's body is valuable for observation purposes. At this point a flask with a double perforated stopper may be connected to catch the urine for analysis.

The bladder may be irrigated through a urethral catheter. By allowing a more rapid flow of water from the reservoir the siphon works more continuously, and with a little regulation of irrigating fluid, all will be carried away without soiling the bed.

I use two irrigations daily until urine becomes normal, then stop. Continuous hot irrigations are not always efficient in stopping hemorrhage, and for this purpose I prefer a solution of alum of strength varying from 1 per cent. to 5 per cent., followed at once by irrigation with a normal salt solution.

The controlling valve shown in the illustration was made from a discarded ethyl chlorid container having a screw valve. The glass tip and opposite end of the container were removed by the heat of an alcohol flame, and the vent enlarged by means of a small bone drill. A filter is provided by inserting a firm plug of absorbent cotton which prevents obstruction of the valve by sediment, and a perforated stopper with a connecting tube completes the apparatus. Tubing for the siphon should not be over ¼-inch in diameter, as capillary attraction has much to do with the successful working of the siphon.

When the large drainage-tube is removed, it may be replaced for a time by a smaller one, and the end of the siphon-tube should be reduced to fit loosely into the smaller tube.

While the bladder wound is healing, after permanent removal of the drainage-tube, a very small tube, wrapped with gauze and inserted part way into the wound, and connected to the siphon-tube, serves to carry off most of the escaping urine during such time as the patient may be confined to his bed.

Soldier's Home Station.

AN ACCURATE MICROCHEMICAL METHOD OF ESTIMATING SUGAR IN THE BLOOD*

ALBERT A. EPSTEIN, M.D., NEW YORK

The method to be described is an adaptation, on a very small scale, of the one devised by Lewis and Benedict[1] for estimating the sugar-content in the blood. It is based on the fact observed by Dehn and Hartmann,[2] also by Lewis and Benedict,[1] that picric acid and sugar in the presence of an alkali (sodium carbonate) give, on heating, a color reaction which is proportionate to the amount of sugar present.

I have used the method of Lewis and Benedict in about three hundred tests for blood-sugar and found it admirable both in point of simplicity and accuracy.[3] It entails, however, the use of 2 c.c. of blood and the employment of costly

* From the Chemical Laboratory, Pathological Department, Mount Sinai Hospital. Work done under the tenure of the Theodor Escherich Fellowship in Pathology.

1. Lewis and Benedict: Proc. Soc. Exper. Biol. and Med., 1914, xi, 57.
2. Dehn and Hartmann: Jour. Am. Chem. Soc., 1914, xxxvi, 403.
3. A solution of picramic acid, suggested by Dr. Stanley R. Benedict, was used as the color standard in most of these tests.

colorimetric apparatus. To overcome these drawbacks and to render the estimation of blood-sugar more suitable for general clinical and laboratory work, I have adopted the Sahli-Gower hemoglobin colorimeter (with suitable color standards) and by that means found it possible to work with small quantities of the necessary reagents, and to estimate with precision the amount of sugar present in 0.2 c.c. or even 0.1 c.c. of blood.

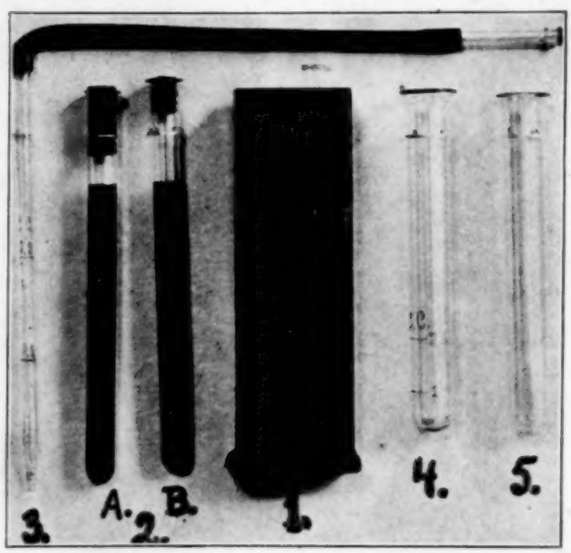
TEST PROCEDURE

The apparatus[4] shown in the illustration and the following reagents are necessary:

1. Picric acid, saturated solution.
2. Sodium carbonate, 10 per cent. solution.
3. Sodium fluorid or potassium oxalate, 2 per cent. solution.

Put one or two drops of the fluorid or oxalate solution into the graduated test-tube 4 (see illustration). By means of the blood pipet, 3, 0.2 c.c. of blood is obtained from the tip of the finger or the lobe of the ear and is discharged into the tube, 4, containing the fluorid solution. The pipet is rinsed two or three times with distilled water and the washings added to the blood in Tube 4. Distilled water is then added to the 1.0 c.c. mark. After laking of the blood has taken place, picric acid is added to this (a few drops at a time) up to the 2.5 c.c. mark, shaking the tube gently with each addition of the acid. Precipitation of the blood-proteins takes place; the sugar, together with an excess of picric acid sufficient for the reaction, stays in solution. The tube is finally shaken vigorously (covering the end of the tube with the finger) and the contents filtered through a small filter, or, better still, centrifuged for one or two minutes.

One cubic centimeter of the filtrate or the clear supernatant fluid obtained on centrifugalization is withdrawn, put into the boiling tube, 5, and heated carefully over the naked flame. The contents of the tube are boiled until all but 2 or 3 drops of the solution is evaporated. One-half cubic centimeter of the 10 per cent. soda solution is then added and the tube heated again until the contents are concentrated to a small volume equal to about two or three drops. The color of the fluid changes from yellow to deep red or reddish brown and the reaction is completed.



Apparatus for estimating sugar in the blood by microchemical method. 1. Sahli-Gower hemoglobinometer stand and graduated tube. 2. Two standard color tubes, one (*A*) suitable for measuring quantities of sugar in the blood ranging from 0.05 per cent. to 0.1 per cent.; the other (*B*) is adapted to quantities of sugar over 0.1 per cent.; 3. A special pipet (resembling but larger than the hemoglobin blood-pipet) graduated at 0.1 c.c. and 0.2 for collecting and measuring the blood. 4. A test tube (½ by 4 inches) graduated at 1.0 c.c. and 2.5 c.c. 5. Another test tube of similar dimensions (not graduated) suitable for boiling.

Three or four drops of distilled water are added and the tube warmed gently. The contents are then transferred to the graduated tube, 1. The boiling tube is rinsed several times with water (using only three or four drops at time). The tube is warmed with each rinsing before transferring the contents to the graduated tube. The volume of fluid is then made up to the mark 50 on the scale.

The color of the resulting solution is compared with that of the two standard tubes, *A* and *B*. If it is darker than standard *A* (representing 0.05 per cent. of sugar) and lighter than standard *B* (representing 0.1 per cent.), the first standard is used for comparison. In either case the solution in the graduated tube is diluted gradually with water (just as is usually done in hemoglobin estimations) until the colors match.

The percentage of sugar in the blood is then computed thus: Using the lighter standard *A* the figure on the scale, divided by 1,000 represents the percentage of sugar in the blood. For example, the tube reads 86; then the result is

$$\frac{86}{1000} = 0.086 \text{ per cent.}$$

When Standard *B* is used for comparison, the figure on the scale is multiplied by 2 and divided by 1,000. For example, the tube reads 73; then the percentage of sugar is

$$\frac{73 \times 2}{1000} = 0.146 \text{ per cent.}$$

With the instructions given, the above formulas may be used for direct computation of the percentage of sugar only, when 0.2 c.c. of blood is used in the determination. When, however, only 0.1 c.c. of blood is used, the formulas apply as well, but the value obtained must be multiplied by 2.

In developing this method I at first used three standard tubes representing 0.05 per cent., 1.10 per cent., and 0.20 per cent., respectively, so as to meet all likely percentages of sugar in the blood. The use of the last of these I found inadvisable inasmuch as the color which it represents is too concentrated, and accurate readings with it are almost impossible. It is better, in cases in which a high sugar content in the blood is suspected (in diabetes for example) to use only 0.1 c.c. of blood for the determination. In all other cases 0.2 c.c. of blood should be used.

The advantages of the method are obvious and require no discussion. It needs only seven to ten minutes to complete a determination of sugar. The small quantity of blood necessary for the test renders it suitable for general clinical work on children as well as adults, and does away with venipuncture. The colorimeter readings are easy and yield reliable results.[5]

995 Madison Avenue.

4. The tubes belonging to this hemoglobinometer are not all equally calibrated. With some the 50 per cent. mark represents a volume of 1.0 c.c.; with others, 1.0 c.c. of fluid reaches up to the 43, 45, 46 or 47 per cent. mark. In all of the tubes that I have examined (twenty-four in number) the error in the calibration is below the 10 per cent. mark; the graduations above this mark are usually correct. By means of the standard 1.0 c.c. pipet one can readily determine whether or not a given tube is properly calibrated. In order to facilitate a direct reading of the percentage of sugar on these hemoglobinometer tubes, it is essential to have 1.0 c.c. of fluid stand at mark 50. To overcome a discrepancy (if any exists) in the calibration of a given tube, one may put one, two or three small glass beads in the bottom of the tube, of such size as to raise the meniscus of 1.0 c.c. of fluid up to the 50 per cent. mark.

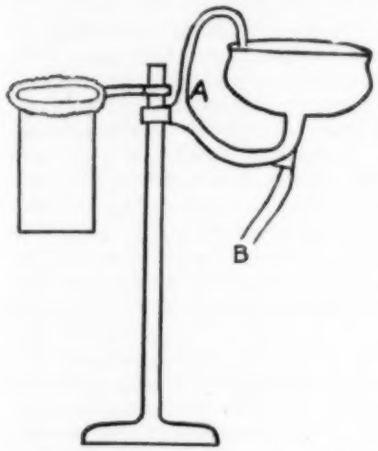
5. The special apparatus devised for this method was made for me by Eimer and Amend, New York.

Hospitals and Education.—It is the privilege and duty of hospitals to extend their field of usefulness by opening their wards more freely to undergraduates in medicine, to elevate the standards of work done by nurses, internes, residents and attending staff, to foster research. By so doing they are not harming the patients, but are rather insuring them better and more skilful treatment. They are serving to enlighten and educate not only the individual, but the observing public as well, eager to learn and to be instructed in knowledge of medical matters.—Herrick.

A SANITARY WASTE COTTON RECEPTACLE

WILFRID HAUGHEY, A. M., M.D., BATTLE CREEK, MICH.

The problem of a sanitary receptacle for waste cotton for ear, nose and throat treatments has been a puzzle. Most of the receptacles on the market have to be cleaned out and are in an awkward position. I have taken an iron ring clamp from an ordinary laboratory ring stand and clamped it to the standard of my fountain cuspidor. I then place a manila paper sack, like those grocers use for sugar, etc., in this ring with the open end projecting about ½ inch above the ring and crushed over it. Waste cotton is simply thrown into this sack. As often as need be the bag is taken out, the open end twisted shut and it is ready for disposal, a new clean sack being placed in the ring. There is nothing that has to be cleaned, and after once taking the cotton from the applicator it does not have to be touched again.



Paper-bag receptacle for waste-cotton. *A*, water, *B*, waste.

This apparatus is handy to the surgeon, inexpensive to instal, and the up-keep is practically nothing. Five hundred sacks cost only about forty-five cents.

24 West Main Street.

AN EXERCISE AND A NEW METHOD OF SELF-MASSAGE USEFUL IN THE TREATMENT OF CHRONIC CONSTIPATION

HALE POWERS, M.D., BROOKLINE, MASS.
Second Assistant Visiting Physician for Diseases of the Nervous System, Boston City Hospital

It is not greatly to the discredit of physicians that chronic constipation is usually treated by medicine alone, or by medicine and diet, and rarely by medicine, diet and mechanical therapy. The physician is not wholly to blame. His experience has taught him that while nearly all patients will faithfully take medicine and some will submit to a restricted diet, only the exceptional individual will or can faithfully take exercises. Want of time or facilities and the aversion to muscular effort which grows on those of sedentary habit are some of the reasons for this.

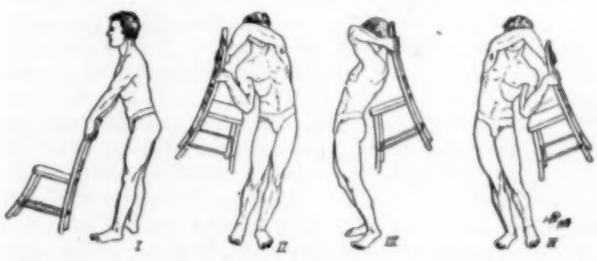


Fig. 1.—An exercise for all of the muscles of the trunk not requiring special apparatus.

The exercises to be described require little time and involve no expense, as they were devised primarily for patients in a free clinic. To overcome a persistent aversion to exercise there is no other way save to interest the patient in sports. Golf and tennis are the sugar-coated pills, or the enticing elixirs of mechanical therapy. Specific exercises are its bitter tonics.

In the treatment of constipation with atonia and low position of the stomach and colon, all exercises calling into action the muscles of the trunk, which are the only ones of much importance to health, are indicated. The value of walking is much exaggerated by those who write on health matters for lay consumption. Going over rough and hilly ground is good, but walking on a level way, which consists merely in the repetition of the restricted movement of placing one foot before the other, does not meet the indications. The familiar exercise of lying on the back and flexing the thighs with legs extended develops the recti, but probably not the oblique muscles, which are of equal importance.

The chair exercise here illustrated (Fig. 1) exerts equally all of the muscles of the trunk. It strengthens the abdominal muscles, whose support is necessary to maintain the viscera in their normal position, and in addition to this it develops the elevators of the ribs, thus removing the abnormal downward pressure which is produced by a contracted thorax. It is performed as follows:

The back of the chair is loosely grasped with the thumbs forward. The left elbow is raised above the head. The left hand is carried forward and to the right and then backward and to the left, and as the chair is rotated the right hand follows the left, the chair being carried behind the body, then to the left and again in front. After circling a number of times from left to right, the movement should be reversed. One should not stand erect and swing the chair in the way that might be considered good form in a gymnasium, but on the contrary, should allow the chair to hang nearly perpendicular, moving the chair as little as possible and bending the body as far forward, as far from side to side and as far backward as possible.

Fig. 2.—Massage of the colon with wooden dumb-bells.

To neglect to employ massage, when it is available, in cases having a flabby and pendulous abdomen, is an omission that cannot be condoned. Every physician should be competent to give massage and willing to do it when time permits. Probably nothing is as effective as abdominal massage by the hands of a skilful operator, but a very good substitute is self-massage with wooden dumb-bells, which I suppose to be a new method. The half-pound wooden dumb-bell is of the proper size for this purpose. The patient lies on his back with legs and thighs partially flexed (Fig. 2) in order to relax the abdominal muscles. As it may be difficult to maintain this relaxation during the massage, the necessity of doing so must be emphasized. Beginning at the cecum and following the course of the colon the abdomen is kneaded with the dumb-bells, which are not held by the handle but by the head which is away from the body. There is to be no pounding but merely deep pressure. This cannot be done with the hands alone, because in that way only light pressure can be exerted. The hand grasping the head of the dumb-bell 8 inches from the body, however, can produce as much pressure as may be desired. It is superior to the cannon-ball massage devised by Sahli, because there is a to-and-fro motion resembling what is done by a masseur. After massaging the course of the colon a few times while lying on the back, the patient turns and lies on the left side and again massages while in this position. This cannot be done at all with the cannon balls. It is a useful procedure because in this posture gravitation assists in the passage of the feces through the transverse colon and the flexures. As the position of the colon varies with the individual and from time to time in the same individual, the massage is not always accurately applied.

but when the body is horizontal this variation is probably never great enough to render the massage ineffective.

Neither the exercise nor massage should be performed while the stomach is full. When gastric stasis, without pyloric obstruction, is present, it may sometimes be relieved by lying on the right side either with or without massaging the stomach.

68 Davis Avenue.

A NEW METHOD FOR FOLLOWING FISTULAS

W. L. Brown, M.D., and C. P. Brown, M.D.,
El Paso, Texas

1. Through an ordinary glass syringe of from 6 to 8 dram capacity a piston is run after it has been oiled with petrolatum to leave the interior of the syringe so that silk thread will stick to it.

2. With a long slim pair of forceps a spool of black silk thread secured from a dry goods store is placed within the interior of the syringe in as near a spiral as possible, the lower end being left close to the outlet of the syringe, and thread several inches long outside of the syringe at the proximal end.

3. The syringe is filled with well-warmed bismuth paste and the fistula injected, the tip of the syringe fitting the external opening of the fistula snugly. The bismuth carries the thread anywhere it is possible for it to go.

Case 1.—An abdominal fistula of the cecum following tuberculous appendicitis, only of sufficient size for gas to

Syringe filled and ready for use.

escape, rarely any fecal matter, had been operated on unsuccessfully once because the small opening in the bowel could not be located. It was injected with bismuth paste and silk thread thirty-six hours before the second operation. The thread led down around the outside of the cecum into its posterior wall through a very small opening; at the time of operation the thread had gone into the bowel and could not be extracted. After the opening had been isolated and ready for closure, the thread was cut flush and left.

Case 2.—In a case of multiple perineal fistulas originating from ischiorectal abscess, one opening to the right side of the anus, one to the anterior side, and one opening high up under the perineum at the base of the scrotum, the fistulas were injected, and it was found that the small opening at the right side of the rectum had direct communication with the opening high up in the perineum. The thread guide gives perfect control of the situation at operation.

In many rectal fistulas the injection can be made at the time of operation, the thread frequently returning from the rectum, or it can be found and fished out with the finger if it is not desirable to make the injection the day before.

It is a great relief in undertaking these operations to feel that one has a perfect and easy method of following the fistula throughout its entirety.

The Wise.—The most manifest sign of wisdom is continued cheerfulness.—Montaigne.

Therapeutics

PREVENTION IS GREATER THAN CURE

(*Continued from page 1579*)

VII

EFFECT OF SEASONS ON HEALTH

A positive indication of the effect of this factor on public health can be obtained by the death-rate in the registration areas for the different months of the year. Many studies of these statistics have been made, and it seems to be a fact that the greatest mortality usually occurs in the month of March, although sometimes January surpasses March in mortality, and February follows closely. In July and August, also, the death-rate is somewhat higher than in the immediately preceding and succeeding months, while the minimum death-rate generally occurs in June, and November is usually the month of next lowest mortality. These statistical facts are not surprising, as it has long been recognized that the highest mortality occurs in the months characterized by extremes of temperature, the hot weather of July and August causing a large mortality among children, while the cold weather of January and February causes a high death-rate from diseases of the respiratory system. Many old people and many feeble persons who may have combated and survived the severity of January and February are quite likely to succumb in March. Also the relaxation of a little warmer weather causing more or less carelessness among the well makes March the month of the greatest number of deaths.

Besides the morbidity and mortality associated with these extremes of temperature of summer and winter, various other factors must be taken into account. Such are local climatic conditions, as peculiarly unhealthy weather may prevail in a region, at any season, and cause the death-rate to be abnormal for that season. Persistent and recurrent rain or snow, dark days, or excessive humidity may so depress individuals that they become more susceptible to disease; and the ill do not so readily recover as when the weather is pleasant. Epidemics of various kinds may, of course, also increase the death-rate at any season.

While it is the sick, the weak, the old, and the very young who are especially likely to suffer from excessive heat or severe cold, even the strong and the robust are affected by climatic severities, and a larger proportion of the well become ill, especially with the intense heat of summer.

To prevent illness in hot summer weather, persons should not unnecessarily expose themselves to the rays of the sun, and should especially avoid severe exercise in the heat when it is not necessary. This is a special warning for those who take hard exercise, in vacation recreations or amusements, in the sun in the middle of the day. Such persons, also, are often not used to such exposures, their work being mostly indoors.

The air in cities is likely to be more dust-laden and more impure in hot weather than in cold weather, as however well the streets are watered, the dust on houses and buildings and in crevices more readily dries sufficiently to be wafted by the least breeze. Also decomposition of all animal matters occurs more rapidly and more readily contaminates the air. Consequently, because of the heat and this air impurity,

all those who are able leave the city and seek the seashore or the country. Such changes of location are not always a panacea, as, if such individuals are compelled to lose all their home comforts, if they must sleep in small, ill-ventilated rooms and in crowded quarters, if they are pestered with mosquitoes and their food is covered with flies, as obtains in so many summer boarding houses, and if the seafood presented is not immediately from the water or properly refrigerated, the harm done is greater than the good. Many things should be considered by the individual or the family and by the family's physician before the summer abode is changed. This is not to minimize the great advantage of vacations and of fresh, clean, seashore and country air, provided other dangers are not incurred. Also, the danger of overdoing seashore bathing must not be forgotten.

For the many individuals or families who cannot leave their homes, or to whom it seems unwise to do so, the summer may be rendered more comfortable by properly screening the windows and doors from flies and mosquitoes and still allowing free circulation of air, screening of verandas or balconies, if such is advisable, resting as much as possible during the interim from labors, and not taking severe and uncomfortable trips or amusements to add to the exhaustion caused by the work that must be done. Many persons come back from excursions or trips, after buffeting with the crowds, more exhausted than when they left. The trolley trip should be selected that gives the greatest amount of fresh air with the least amount of crowding and exertion. Cool bathing should be advised and urged as a most splendid method of lowering the temperature, cleansing the skin from perspiration and causing it to become more active and thus lowering the internal temperature. Of course excess of such bathing should be avoided.

Before leaving this subject of summer heat, let it be urged once more that over-eating, late hours, and strenuosity in vacation and summer amusements should be abolished, and that the prime thing is restfulness in the coolest, cleanest air that can be obtained.

Men are not careful enough to wear thin clothing and protective, air-cooled hats. In this era nothing need be said of the air-cooled clothing of the women for summer. Certainly from a physiologic and sanitary, if not a moral point of view, their clothing seems unassailable.

As to the opposite climatic extreme, namely, the severe cold of winter, it is equally important that the strong as well as the weak should not subject themselves to needless exposure. The strong are likely to boast that they do not need overcoats or other means of protecting themselves from the cold. Many such individuals fall by the wayside, needlessly. The underclothing should be that found best for the individual; whether linen mesh, silk (if one can afford it) or thin woolen, is a matter for individualization, modified by the region in which one lives, and the work which one does. Whether an individual wears overcoats or sweaters is a personal decision, but the wearing of sweaters all day, at work or in buildings, is a serious mistake, which is made frequently by young men. The feet should be warm, the kind of shoe depending on the weather. High shoes should be worn in cold weather and rubbers when it is wet, unless the shoes are water-proof. If a child wears rubber boots for storm and play, in wet and snowy weather, he should not be allowed to sit with them on in school. Rubber heels are always good; rubber soles are a serious mistake, especially in summer, and for one to be insulated with these heavy rubber-bottom shoes for hours, or all day, is an abomination. Such rubber insulation causes the feet to perspire, and causes a lack of tone of the feet.

The costume and clothing of men in winter does not require a great deal of discussion. The clothing of women and girls, projected from the summer into the winter, is a proposition that it is practically hopeless and needless to discuss. They wear furs draped around them almost anywhere; the warmth of the rest of their costume is indeterminable. We venture to state that the physician of to-day rarely feels more helpless than when one of these girls comes to his office with a severe cold and cough. He knows that it is more care and common sense that cures a cold than drugs, and without the two former elements in the cure he is forced to rely on drugs in which he has but little faith. Any common-sense advice that he will give such a girl will either place him in disfavor, or will be received and not acted on. It might be parenthetically stated that what is said above also generally applies to the girl's mother.

The clothing of young children in cold weather is more often incorrect than correct. Many are overclothed; many are under-clothed. The family physician should carefully advise in this important matter.

Those who habitually live or work in warm rooms should be careful to wear clothing of moderate weight so as not to be overheated while in the house, but they must put on overcoats or cloaks on going out. In the northern and eastern parts of the United States people are very likely to have their houses overheated in winter. A temperature ranging from 68 to 72 F. with an adequate amount of fresh air is the temperature that is the most healthful. Old people and very young children require and must have greater heat than this in winter. The best heating system for houses and buildings need not here be discussed.

Individuals who can afford it, and who are weak and feel the cold severely, or who suffer more or less from bronchitis, colds, or other disturbances due to cold weather, should go to a warmer region during the winter. If they go to the southern United States, however, they must go far enough south to get the warmth, and not into the middle south where it is not very warm, and where the houses are not as well heated as their own homes. They should go at least below South Carolina in the East, and in the West, to Southern California, Arizona, or New Mexico. Many people who can afford this climatic luxury return to their homes too early in the spring, and are more likely to acquire severe colds, and even pneumonia, than though they had remained at home all winter. Also, it must not be considered that these regions are exempt from the possibility of severe chilling and from pneumonia. Many an individual has gone to a warmer climate and acquired pneumonia, and died of it.

(To be continued)

Hygiene and Society.—Every citizen should be inspired with love of personal and public hygiene, as were the Greeks. Every physician should be deeply grounded in physiologic medicine and provided with proper facilities for using it practically. Every public health officer should know thoroughly the contributions of etiologic medicine. All efforts should be made to promote these fundamental needs of society.—Bardeen.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street . . . Chicago, Ill.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

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SATURDAY, NOVEMBER 7, 1914

VENTILATION

In the light of more modern studies in ventilation it would seem that the real explanation of the ill effects of bad ventilation is not to be found in the chemical composition of the atmosphere breathed. One is constrained to ask wherein the disagreeable or detrimental influences of poorly ventilated spaces lie. The various phases of this vital and timely, though not new subject were discussed some time ago by qualified experts in a symposium on ventilation at the Chemists' Club in New York City.[1] There is unanimity among them regarding the possible significance of the chemical vitiation of the air. Pure air contains nearly 21 per cent. of oxygen. This may be reduced to 17 per cent., a proportion too small even to support ordinary combustion, before its diminution becomes harmful. Except in extreme conditions the amount of oxygen in the closest halls crowded with people practically never falls below 20 per cent. Oxygen will, therefore, take care of itself and may probably be wholly left out of consideration in ventilating systems. Indeed, Henderson[2] has reminded us that it is necessary to go only a short distance up into the mountains to come under an atmospheric pressure such as to reduce the oxygen supply much more than it is reduced in crowded assemblies, and yet mountain air is especially healthful. The amount of oxygen in the air apparently has little or nothing to do with the stimulating or depressing properties of the atmosphere breathed in ordinary life.

The air, under the usual conditions, contains about 4 parts of carbon dioxid per ten thousand parts (0.04 per cent.) and the "standard" of desired purity for the air of dwellings was long placed as low as 6 parts per ten thousand. Experimentation indicates, however, that it does not become harmful to man until the carbon dioxid accumulates to above 1 per cent., or nearly forty times its usual amount. The air in crowded rooms very rarely reaches 0.4 per cent., so that evidently a quantity of carbon dioxid far exceeding the highest hygienic limit which has hitherto been set up as a "standard" can be breathed with impunity. Certain it is that the poisonous properties of this waste product of combustion have been greatly overestimated when the physiologic limits have been placed in terms of parts per ten thousand; though we may hesitate to accept the much higher concentrations of carbon dioxid at which a few individuals have lived in comfort under conditions of experiment, as a safe guide for formulating rules which shall apply to all persons and over long periods. Lee has exhibited the mental attitude which ought always to characterize men of science by admitting that notwithstanding these recent changes in our ideas of the relation of oxygen and carbon dioxid to ventilation, he is not prepared to say without reservation that the continued exposure of an individual day after day and week after week to even a moderately diminished quantity of oxygen and a moderately increased quantity of carbon dioxid would be wholly without harm. The hygienist is led to this reservation not by any existing physiologic knowledge, but rather by the necessity of maintaining an open mind receptive to future possible discoveries.

The long-debated idea that expired air contains organic matter which is toxic has been abandoned by most physiologists. The odor which permeates a crowded room and the putrescible character of the fluid which can be condensed from the atmosphere under such conditions leave no doubt of the presence of foreign substance of some sort attributable to the presence of man. There is no tenable evidence, however, that this comes from the lungs and is incident to respiration itself. The organic matter is probably derived from decomposition of food particles in the mouth. The well-known contention of Rosenau and Amoss[3] in 1911, suggesting the presence of a peculiar organic and volatile constituent, probably of a protein nature, which is toxic to human beings and other animals has not been supported by the independent researches of Weisman and of Lucas. It seems likely that the odor of air vitiated by human beings is no index of the presence of specifically harmful ingredients. It has been stated also that the bacteria in the air need not be considered in relation to the problem of ventilation, since the comparative unimportance of the air as a vehicle of infection is becoming widely recognized.[4] The assumed desirability of washing the air free of dust is thus put in a new light.

In contrast with all the foregoing negative factors with respect to the causes of discomfort or ill health

1. The addresses are printed in full in the Jour. Indust. and Engin. Chem., 1914, vi, 245 flg., as follows: Lee, F. S.: Physiological Problems of Ventilation, p. 245; Kimball, D. D.: Mechanical Problems of Ventilation, p. 248; Baskerville, C.: Investigation of School Air in New York City, p. 250; Winslow, C. E. A.: The New York Commission on Ventilation and Its Problems, p. 255.

2. Henderson, Y.: The Unknown Factors in the Ill Effects of Bad Ventilation, Tr. XV. Internat. Cong. Hyg. and Demography, Washington, 1913, ii, Part 2, p. 622.

3. Rosenau, M. J., and Amoss, H. L.: Jour. Med. Research, 1911, xxv, 35. The Physiologic Properties of Expired Air, editorial, The Journal A. M. A., March 9, 1912, p. 702.

4. Chapin, Charles V.: The Air as a Vehicle of Infection, The Journal A. M. A., Feb. 7, 1914, p. 423.

hitherto associated with inadequate ventilation, we may now conclude with reasonable certainty that the symptoms of discomfort in a badly ventilated place are due to the physical condition of the air in respect to temperature, humidity and movement, and not to any chemical properties whatever. Flügge long ago alleged that the familiar symptoms noted in closed, crowded rooms — restlessness, headache, dizziness, nausea, etc. — are to be attributed solely to heat retention. There are investigators who, while admitting the essential facts that the malaise of bad ventilation depends on interference with heat elimination by the skin and is due wholly or in part to heat stagnation in the atmosphere contained in the pores of clothing surrounding the body, find the explanation here advanced unsatisfactory.[5] Nevertheless, overheating is the chief evil to be guarded against in ventilation at present.

Most persons realize that in our American cities the chief danger of our torrid summer days is not the heat alone, but the combined heat and humidity; few appreciate that it is precisely the same factors which are responsible at all seasons for the evil effects of the confined air of rooms. There is no doubt that the air of our American living-rooms and many schoolrooms and other assembly chambers is kept too warm. No fixed standard percentage of humidity can be set, since the content of aqueous vapor in the air is so closely related to temperature. As Lee remarks, if any single standard is to be chosen as the standard of healthful air, it is probably the temperature of the air as indicated by the wet-bulb thermometer, which is a measure of heat and humidity combined. The effect of clothing appears to be disregarded by nearly all who discuss these problems; indeed, the hygiene of clothing remains to be written. According to Haldane, body temperature begins to rise in fairly still air, even in persons stripped to the waist and doing no work, when the wet-bulb temperature exceeds 31 C. (88 F.); when moderately hard muscular work is done, the rise may begin at 26.7 C. (80 F.). When ordinary clothes are worn, serious rise of temperature in still air may begin at much lower wet-bulb temperatures. Soldiers marching in uniform, for instance, are liable to heat-stroke at wet-bulb temperatures of under 21 C. (70 F.).

Much criticism has been aimed in the past at the apparent inadequacy of various "systems" of ventilation. An expert present at the New York symposium[5] insisted that there were no mechanical problems unsolved in the field of ventilation; that is to say, the engineer can provide any chemical or physical condition of the atmosphere of a closed space which may be required. What is needed, primarily, is some agreement among physiologists and medical men as to the desiderata in respect to the air in which we must live and work. The engineer may then be counted on to provide the conditions, whether they concern oxygen, carbon dioxid, the once vaunted ozone,[6] temperature, humidity, air-movements, dust or bacteria. Many existing ventilating plants yield unsatisfactory results for reasons which are not related to shortcomings of the ventilating engineer. Until recently he has been told by the hygienist that the prime object of ventilation was to remove noxious gases rather than to regulate air-temperature and humidity; and, furthermore, he has rarely been able to count on an intelligent and conscientious operation of his plants after they have been built.

Professor Winslow has well summarized the importance of the subject under discussion by reminding us that there are three factors and only three which universally affect the life-processes of living beings. These are the physical and chemical conditions of the enveloping medium, food-supply, and predacious or parasitic enemies. The first of these factors, in the case of man, is solely a question of air-conditioning or ventilation. When the ideal air-conditions and practical methods of securing them have been worked out with reasonable completeness an incalculable gain in the health and efficiency of man will have been effected.

One cannot read the interesting contributions presented by Winslow, Miller, Lee, Bass, Ohmes, and Van Der Bent in the current number of THE JOURNAL[7] without realizing that further investigations of the conditions *actually* existing in the midst of what is assumed to be inadequate ventilation are called for. As one of the writers has remarked, the extraordinary thing about the shifting practices in the ventilation of public buildings is that sweeping conclusions and far-reaching changes in policy have been arrived at without any detailed or systematic study such as seems essential in order to establish a safe basis for action.

5. Kimball, D. D.: Jour. Indust. and Engin. Chem., 1914, vi, 248.

6. See editorials, THE JOURNAL A. M. A., Ozone Myths, Feb. 10, 1912, p. 412; The Truth About Ozone, Sept. 27, 1913, p. 1045; Temperature and Humidity in Hospitals, Oct. 25, 1913, p. 1541; The Ventilation Problem, Nov. 22, 1913, p. 1902.

7. Symposium on Air Problems in Hospitals, THE JOURNAL A. M. A., this issue, pp. 1620-1635.

A GOVERNMENT REPORT ON THE FRIEDMANN TREATMENT

In recent years there has probably been no announcement in medical literature which attracted a more wide-spread attention in this country than did the announcement of the Friedmann treatment for tuberculosis. This was due to skilful handling of the publicity work in the daily press. The sensational newspaper reports of alleged improvement and cure of cases of tuberculosis following the use of the treatment, the reports of persons of high position in public life, of lay workers in tuberculosis, and even a few physicians who became enthusiastic supporters of Friedmann will be recalled by every one. When a

note of warning was sounded by THE JOURNAL and others the assertion was made that Friedmann was being hindered in his great work. The fact is otherwise.

Immediately on the arrival of Dr. Friedmann in this country, the United States Public Health Service took up an investigation of the validity of the claims for the treatment. A board was appointed consisting of Surgeon John F. Anderson, the director of the Hygienic Laboratory, and Surgeon A. M. Stimson, to make a thorough study of the results of the use of the treatment. The report of this board[1] has just appeared and its findings are a complete refutation of Friedmann's claims, not only for having developed a specific cure for tuberculosis, but also for the harmlessness of his treatment for man and animals. The board had an opportunity to observe the effect of the treatment in ninety-four cases of tuberculosis and was prepared to furnish many more for treatment and observation, but owing to Dr. Friedmann's delay, dilatoriness and unprofessional conduct it was obliged to limit observations to the ninety-four cases.

The claims made for the treatment were, briefly, that by means of injections of a living acid-fast organism, harmless of itself, it was possible to cure cases of tuberculosis which had not advanced to that stage where death was imminent. From the way in which the claims were put forth and from the fact that successes only and not failures were reported in the public press, the reader of Friedmann's claims could assume that such results only were the rule. In other words it was claimed that a sovereign remedy for tuberculosis had been discovered and that a method had been devised whereby living acid-fast organisms could be administered without abscess formation.

Investigation did not confirm the claims. On the contrary, it was found that the preparation used was not devoid of dangerous properties of itself, and still less so when injected into persons with tuberculosis. A favorable action on tuberculous processes by the treatment was certainly not the rule, and if the improvement noted in a few cases was to be ascribed to the treatment, we are equally bound to attribute to it the serious retrogression observed in other cases. Abscess formation had not been avoided, as abscesses occurred in a number of cases.

The board made extensive studies of the organism used in the preparation of the vaccine, both by cultural methods and by animal inoculation. It was found that the injection of the organism in animals causes abscess formation in over 25 per cent. of the animals treated. Animals treated with the organism —rabbits and guinea-pigs—either before or subsequent to infection with virulent tubercle bacilli, developed as a rule an increased susceptibility to tuberculosis. The treatment did not show either curative or protective properties in monkeys against tuberculosis.

The observations of the board on the methods of injection and dosage employed by Friedmann offer an interesting side-light on his methods. It was found that the technic employed by Friedmann was in general adequate but not scrupulous, although some glaring exceptions were accidentally observed. Two bottles of the material for injection were at hand, one to be used for intravenous injections and the other for intramuscular. Cultures made by the board, on three occasions, from these bottles, showed a contamination in two instances. On at least one occasion the board observed that the bottles became unwittingly confused, without, however, causing any unusual symptoms in the patient.

It is a matter for congratulation that this painstaking report from the Public Health Service has appeared; it is a pity that it could not have been given publicity at the time when consumptives were being so widely exploited; but scientific work of the kind done by the Public Health Service in this instance obviously requires a long period of time. It is a report that shows the absolutely flimsy evidence on which the Friedmann method for the treatment of tuberculosis was based. Of course this report is merely what might have been expected. It is confirmatory of other reports that are now in the possession of THE JOURNAL from widely separated points. The evidence which THE JOURNAL has accumulated and which includes reports on the poor victims that relied on the Friedmann treatment—together with the death notices of scores of victims—shows that the commercialization of the Friedmann cure was a grisly hoax on the unfortunate but ever hopeful consumptive.

1. Anderson, John F., and Stimson, Arthur M.: The Friedmann Treatment for Tuberculosis: A Report of the Board Appointed for Its Investigation, Hyg. Lab. Bull. 99, 1914; abstr., THE JOURNAL A. M. A., this issue, p. 1690.

FLIES AS CARRIERS OF DISEASE

The part that insects, and especially the two-winged insects or *Diptera*, play in the transmission of disease, has given a profound impulse to the study of the methods and mechanisms by which the microorganisms are conveyed from one diseased subject to another. More has been done in the study of disease-carrying insects, their habits and intimate anatomy, during the past twenty years, than in all the years preceding. The agency of mosquitoes in yellow fever and malaria, and the possible relations of the black-fly to pellagra, of the moth-fly, *Phlebotomus*, to verruga, of the stable-fly to infantile paralysis, of the tsetse flies to sleeping sickness and various diseases of the domestic animals are among the most astonishing and far-reaching discoveries of biologic and medical science of the past quarter of a century.

Of all the groups of blood-sucking flies that molest man only the minute *Ceratopogon* midges or punkies

have so far not been accused of criminality. And it may be confidently believed that ere long even these little pests will be arraigned for high misdemeanors. Fortunately the blood-sucking horse-flies, the only other two-winged flies that have piercing proboscides, do not often molest man, but that will not absolve them from all suspicion.

Of the blood-sucking *Muscidae*, the common stable-fly, the horn-fly and the various tsetse flies of the Far East are the only ones that have achieved much popular notoriety; the first has been accused, probably rightfully, as the conveyer of the minute germs of infantile paralysis; the last have been known for the past fifty years to be the cause of various diseases of domestic animals in Africa, and more recently of the sleeping sickness in man. One wonders that the relations between cause and effect that have been known for so long had not led earlier to the discovery of the trypanosomes; but the student of "bugs" was then looked on by the generality of men in a sort of contempt.

In a recent memoir, Cragg[1] gives a technical description of the mechanism of the blood-sucking apparatus of these muscid flies and a number of their newly discovered relatives in India which will appeal only to the specialist, for the greater part. But some of the author's conclusions are of wider interest. He shows, very satisfactorily, that the flagellates found in the alimentary canal of the blood-sucking muscids and allied non-blood-sucking forms did not come originally from the blood of vertebrates; the facts simply point to a common origin of the two types. The author seems unquestionably right in maintaining the view that blood-sucking habits are a specialization in these, as in all other blood-sucking flies; but he seems slightly hazy in his geologic reasons. At no time since flies have been in existence, for they are a comparatively late evolution among insects, has the world been more covered with water than at the present time. Tsetse flies are very old inhabitants of the earth. Specimens of them have been found in the Tertiary rocks of Colorado, and it has been stated by an experienced observer that they have been correctly identified. Tsetse flies lived in North America at least half a million years ago, and how long it took for them to migrate here from Asia, which probably was their original home, no one can say. It is not at all improbable, according to Cragg, that the original ancestors of all the species of *Glossina* lived a million years ago, and that the common parents of tsetses and the other muscids which breed the allied flagellates lived half a million years earlier still. Lots of things could happen in a million years. Kellogg of California has recently reached the interesting conclusion that the allied species of *Pediculus* that infest the hair of the uncleanly and that of the simian apes had common ancestors in the parasites of the common ancestors of man and the same simian apes, at least as long ago as Miocene times, say not less than half a million years ago. That is nothing very strange either, for recent research goes to show that many allied birds and mammals have allied parasites which have descended from their common ancestors parasitic on the common ancestors of their hosts.

All of this goes to show that the blood-sucking habits of flies are exceedingly old ones, to speak in non-geologic terms. Another conclusion of Cragg of immediate economic interest to the physician is that "the evolution of blood-sucking habits can be seen at the present time in those flies which are blood-suckers, but which have no biting mouth-parts," but which "depend on true biting flies for the making of the wound"—a sort of commensal parasites. His own observations as well as those of other students seem to prove his contestation.

It is needless to say that these results are important, because such flies, while having no biting mouth-parts, may easily be agencies for the transfer of micro-organisms from the sick to the well. Cragg also shows from the structure of the mouth-parts why the *Glossina* flies, unlike the stable-flies, for instance, stand upright in the act of thrusting the proboscis into the skin of animals.

1. Cragg, F. W.: The Comparative Anatomy of the Proboscis in the Blood-Sucking Muscidae, Scientific Memoirs of the Medical and Sanitary Departments of the Government of India, Calcutta, 1913.

IODIN AND THE THYROID SECRETION

That the thyroid gland elaborates some sort of "internal secretion," which finds its way through some channel or other into the general circulation and is thereupon distributed in the organism, is to-day tacitly assumed. There is, of course, considerable indirect evidence of such a thyroid function; but the detection of the actual product of glandular activity in the blood or lymph has not been attended with success. How important it would be for the understanding of numerous as yet unsolved thyroid problems if the secretion product could actually be traced in the body, scarcely needs to be pointed out.

The interrelation of iodin and the thyroid glands has centered attention on the possibility that the glandular product is an iodin-containing substance. Small amounts of iodin are common constituents of the glands, which respond to the introduction of iodin into the organism by retaining a portion in their tissue. The element is not merely present in some readily soluble inorganic form such as the iodids, in the guise of which it is commonly administered. The greater part of the iodin of the thyroidal tissue exists in fixed organic combination, presumably with proteins.[1] The iodized protein of the thyroid does not exhibit a con-

1. Compare Blum, F., and Grützner, R.: Studien zur Physiologie der Schilddrüse. IV. Mitteilung. Schicksal des Jods in der Schilddrüse, Ztschr. f. physiol. Chem., 1914, xci, 400.

stant content of iodin, but one that is quite variable and is increased after iodid administration.

Is the thyroid hormone or secretory product—if such there be—really an iodized substance? There have been assertions that this is the case,[2] although there is no lack of negative evidence in the literature on the subject. The fact, for example, that in the absence of any iodin intake the thyroid still maintains its content of the element, in other words, that the iodized substance does not become exhausted by secretion in the absence of a renewal of supply, has been urged against the assertion.[1] The search for iodized compounds in the blood or lymph, in which the product might be expected, becomes a search for minute traces and involves a most refined chemical technic. The newest researches by Blum and Grützner[3] in Frankfort conclude that organic iodin compounds, such as one would expect in the case of thyroid secretion, are not to be found in normal blood. Small amounts of iodin in inorganic form may be discovered now and then; but they are accidental and are derived directly from the food. The blood from patients suffering from various pathologic conditions has at times been found to exhibit organically combined, that is, non-ionized, iodin. This is particularly true in eclampsia. This indirect fact will not, however, justify the conclusion that iodin forms a part of the normal secretory product of the thyroids. The bearing of the discovery must await an accumulation of experimental evidence.

2. Biedl, A: Die innere Sekretion.
3. Blum, F. and Grützner, R.: Studien zur Physiologie der Schilddrüse. V. Mitteilung. Kommt Jod im Blut vor? Ztschr. f. physiol. Chem., 1914, xci, 450.

ALFONSO CORTI, A SUBMERGED HISTOLOGIST

The name of Marchese Alfonso Corti is permanently associated with his great discovery of the spiral "organ of Corti," containing the terminal auditory apparatus of the cochlea, and its component parts, eponymically known as the cells, ganglion, membrane, rods, teeth and tunnel of Corti. Beyond this fact and the titles of his works, nothing whatever has been known of his life to date. Hyrtl, it is true, designated him as his prosector,[1] and Corti's epoch-making monograph of 1851, a milestone in the history of otology, gave him the widest reputation. His brother Luigi, a prominent Italian statesman and diplomatist, known during his term of residence in nearly all the embassies of the greater cities, became Minister of Foreign Affairs under Cairoli in 1878. The elder Corti himself, however, although living and working in the full current of modern science, suddenly and mysteriously sank out of public recognition about the middle of the nineteenth century and became as one submerged.

1. Hyrtl: Lehrbuch, Ed. 14, p. 626. A short sketch of Corti's work is given in Hirsch: Biographisches Lexikon, ii, 86.

In 1907, Dr. Joseph Schaffer of Vienna applied to Prof. Max Neuburger for biographic information about Corti, and received the significant reply, "Corti belongs among those whose names are on every lip and of whose lives one knows nothing." The distinguished medical historian was able, however, to put Dr. Schaffer in touch with various Viennese archives of documents, thus starting him on a train of research the results of which have been recently published.[2] A brief abstract of these may be of interest to our readers.

Alfonso Corti, the son of a Piedmontese marquis of the name, was born on one of his father's estates at Gambarana, Sardinia, June 15, 1822. After completing a course of philosophical studies at Pavia, he entered the medical school there in 1841, mainly, as he himself said, through a particular liking for anatomy, human and comparative. For four years he devoted himself to the subject, under the direction of Panizza and Rusconi, and during the time made many preparations for the Royal Museum of the city. His industry and his special aptitude soon gave him the position of actual, if not nominal, assistant at the university. This post, however, was soon abandoned for the attractions of the New Vienna School, of which Hyrtl, just called from Prague and perhaps the greatest anatomic teacher of his time, was then the bright particular star. Reaching Vienna in 1845, Corti appears to have first matriculated at the university about 1846-1847, and shortly after was assisting Hyrtl in the preparation of lecture specimens. Twelve human and twenty-four comparative preparations of Corti's handiwork are still in the Anatomical Museum at Vienna. During his vacations home, he made collections of marine zoology on the Italian coast, some of which he took back to Hyrtl. He soon mastered the German language, but his inaugural dissertation, on the vascular system of *Psammosaurus griseus* (Vienna, 1847), dedicated to Hyrtl and illustrated with six original drawings, was written, as then usual, in Latin. Dec. 16, 1847, Corti was chosen as Hyrtl's second assistant (without emolument), after an official demonstration of his practical skill in which his fluency in German was amply displayed. Hyrtl and Czermak both spoke in glowing terms of this demonstration (on the neck), of which Corti's holographic report still exists at Vienna. During the March revolution of 1848, the university buildings, containing the anatomic institute, were turned into a barrack, and Corti's laboratory was transferred to the narrow confines of the Josephinum. He therefore went up to Berlin to follow the lectures of Johannes Müller, who seems to have spurred him to the study of the higher sense organs, as shown by Corti's next publication,[3] on the

2. Schaffer: Anat. Anzeiger, 1914, xlvi, 368. See also, Brückner, G.: Arch. f. Gesch. d. Naturwissenach., 1913, v, 69.
3. Corti: Müller's Arch., Berlin, 1850, p. 273.

anatomy of the retina (1850). In this he discovered the origin of the optic nerve fibers of the retina from the multipolar cells of its inner layer. In the early autumn of 1850, Corti was in Utrecht, but it is inferred that he began his studies on the cochlea at Wurzburg prior to this visit, since he had already lent drawings to Kölliker and studied the retiform arrangement of cardiac muscle with him. Kölliker, in his work on microscopic anatomy (1850), already mentions Corti's work on the lamina spiralis. June 30, 1851, Corti published his *opus magnum*, on the auditory organ of mammals, in particular the cochlea, in Kölliker's *Zeitschrift*.[4] Kölliker gives a full account of Corti's work in his "Handbook of Histology" (1852), and in the second volume he characterizes it as the starting point of any exact knowledge of the cochlea. It is interesting to note that Corti appears to have employed the carmin stain before Gerlach. His confirmed Corti's discovery that the spinal ganglion of the cochlea nerve contains bipolar cells, in the embryo, and Retzius, by means of Golgi preparations. The second part of the monograph, which was to deal with the human cochlea and the vestibule of mammals, and incidentally to extend morphologic investigation to a great variety of animals and apply the laws of acoustics to the elucidation of auditory functions, was never completed. Shortly after the publication of the memoir, Corti disappeared, "like a meteor from the horizon line," and was never heard from again as a contributor to scientific literature. What was the cause of the mystery?

In 1852, he returned to Italy, sending to Kölliker from Turin what was to be his last communication, on a dissection of an elephant in the Royal Museum at Stupinigi, made at the instance of Professor de Filippi. About this time he began to suffer from a severe arthritis deformans, acquired in early youth, which involved his hands and feet to the extent that he could neither move nor eat without assistance. Confined to his chair by increasing pain and absolute helplessness, he was forced to give up his scientific and social activities and retire to his estate, the Villa Mazzolino, near Casteggio, where he took up wine culture with the same zeal and skill which he had hitherto devoted to histology. The improvements and novelties introduced by him are said to have been of great benefit to the peasants of the country round, the Corti estate being virtually a school of agriculture. In 1855, he married Maria Bettinzoli, a lady of noble birth, by whom he had two children. His son married a Countess Sanseverino (whose name suggests Stendhal's famous heroine) and continued his father's enologic activities at Corvino San Quirico, where the eminent histologist himself died, Oct. 2, 1876.

4. Corti: Recherches sur l'organe de l'ouie des mammifères, 1e Partie, Limaçon, Ztschr. f. wissensch. Zool., 1851, 109.

Current Comment

UNWRAPPED BREAD

The increasing displacement in this country of home-made bread by the bakery loaf has been accompanied by a growing attention to the sanitary aspects of the baking industry. Attempts, in large part successful, have been made to improve the conditions under which bread is prepared in city bakeries. It is evident, however, that the conditions of distribution as well as of preparation need to be safeguarded. We have already commented[1] on the possible dangers of bacterial contamination of bread through handling by typhoid or other disease carriers. Recent studies have added to the evidence we surveyed at that time. In a paper by Jacobs, LeClerc and Mason[2] of the United States Department of Agriculture it is shown that the surface of wrapped bread purchased from retail markets is more nearly free from organisms than unwrapped bread obtained at the same time from the same sources; *Bacillus coli* was found more than eight times as frequently in the unwrapped loaves. This result is substantially the same as that obtained by Katherine Howell[3] on which our previous discussion of this subject was based. Curiously enough, these later writers make no reference to Miss Howell's work. With respect to the effect of wrapping on the palatability and general quality of bread, the conclusions of Jacobs, LeClerc and Mason are generally favorable. They state that, while bread as it comes from the oven has a sterile crust, it may become contaminated with organisms while cooling in the laboratory and therefore should be wrapped as soon as it is sufficiently cooled, a period which they fix at approximately three hours. In their discussion, however, these writers do not sufficiently discriminate between the sanitary importance of organisms such as molds or harmless air bacteria, and definite pathogenic microbes that may be smeared on the bread from infected hands. Protection of the bread from contact with fingers or mouth spray is much more essential than protection from ordinary dust. The fact that "bread which was cooled only one hour before wrapping retained heat and moisture enough to favor the growth of certain organisms" does not necessarily mean that a higher degree of safety is obtained if wrapping is delayed for two hours longer, and the authors would probably not wish such a conclusion to be drawn from their work. One practical point brought out in this paper deserves especial mention, namely, that unwrapped bread becomes stale noticeably sooner than wrapped bread and that the gain to the baker by wrapping undoubtedly more than balances the extra cost. Of great economic importance —when we consider bread, economy is important—is the reduction in weight of the wrapped loaf as compared with the unwrapped. A conference with a number of bakers showed that the cost of wrapping is from

1. The Bacterial Contamination of Bread, editorial, JOURNAL A. M. A., July 6, 1912, p. 39. The Wrapping of Baker's Bread, editorial, JOURNAL A. M. A., Oct. 10, 1914, p. 1298.
2. Jacobs, LeClerc and Mason: Am. Jour. Pub. Health, 1914, iv, 721.
3. Howell, Katherine: Am. Jour. Pub. Health, 1912, ii, 321.

4 to 5 per cent. On the other hand, the reduction in weight of wrapped loaves varied from 7.5 to 14 per cent. The consumer can be expected to bear at least half the cost of wrapping, or 3 per cent., but he should not be compelled to pay all of it, including a profit. A similar, but less comprehensive, study made by the Research Laboratory of the New York City Health Department has also been reported recently,[4] and this also confirms the results of Miss Howell respecting the bacterial superiority of wrapped loaves. We may consider it as established that the distribution of unwrapped bread offers manifold possibilities of infection, and that the use of wrapped bread not only offers some safeguard against disease transmission, but entails no economical disadvantage.

THE ARTIFICIAL MENOPAUSE

The opinions held by gynecologists with respect to the effects of complete surgical extirpation of the ovaries are not in entire accord. Probably the incidence of age plays a part in the character of the individual consequences. In women of child-bearing age the operation often results in a characteristic train of symptoms known as the artificial menopause. A great diversity of phenomena, such as excessive sweating, increased pulse-rate and signs of vasomotor instability, have been described, most of them manifesting themselves comparatively soon after the operation and finally disappearing after some months.[1] It is not easy to evaluate and correctly to interpret a group of symptoms which are particularly exhibited in relation to the nervous system and which have the further psychologic uncertainty that attaches to human evidence of a personal sort. Long ago the effects said to follow ovarian extirpation were charged to a condition of overexcitability in the sympathetic system. Obviously it would be a great advantage to have some tangible, objective indication of what, if anything, actually takes place in the nervous system as the result of the operative procedure referred to. The evidence should include something more than mere "behavior" or manifestations of peculiar "feelings." Drs. Hoskins and Wheelon[2] of the Northwestern University Medical School in Chicago have determined the degree of sympathetic irritability in animals at various intervals before and after ovariectomy. The vasomotor system was selected as exemplifying the sympathetic system as a whole. Blood-pressure records were obtained to show the influence of selected drugs. The reactions to standard quantities of nicotin gave an index of the irritability of the sympathetic nervous system proper and similarly the reactions to epinephrin indicated the condition of the peripheral vasomotor structures. The research showed a marked augmentation in the vasomotor reaction to the nicotin within from six to eight weeks after removal of the ovaries. The reaction to epinephrin was not similarly increased, thereby suggesting that the augmented irritability was neither in what has been termed the sympathetic "receptive substance" nor in the vascular musculature, but rather in the sympathetic system proper. Hoskins and Wheelon conclude that these results, in conformity with clinical evidence, indicate that the operation does cause a heightened irritability in the sympathetic nervous system.

4. Weekly Bulletin of the Dept. of Health of the City of New York, Oct. 10, 1914.

1. Compare Schickele: Innere Sekretion und Nervensystem, Lewandowsky's Handbuch der Neurologie, 1913, iv, 434. This gives the literature.

2. Hoskins, R. G., and Wheelon, H.: Ovarian Extirpation and Vasomotor Irritability, Am. Jour. Physiol., 1914, xxxv, 119.

EDUCATIONAL WORK OF THE NEW YORK CITY HEALTH DEPARTMENT

A program of educational work recently undertaken by the Department of Health of the City of New York promises great things. Though familiarity with advances in medical and sanitary science is necessary to their highest efficiency, the medical and lay employees of health departments find it difficult to keep up with the rapid progress along such lines. To overcome this difficulty the New York City health department has provided four courses of lectures, one for its medical inspectors and other physician employees, one for its lay inspectors (food and sanitary), one for its hospital nurses, and one for its field nurses. Attendance is not compulsory, but employees are expected to be prepared to pass an examination, at the termination of the course, on the subjects discussed. All the courses except that for hospital nurses (which is given in the various hospitals for contagious diseases) are open to the public. The health department further offers to provide lectures on any of the subjects in the course on application from organizations. The plan and scope of this work are so good that the results cannot fail to be a great public benefit.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. Robert T. Legge has resigned as chief surgeon of the McCloud Hospital to take effect Jan. 1, 1915, and has accepted the appointment as professor of hygiene and university physician at the University of California, Berkeley.——Dr. Ernest L. Walker, formerly chief of the medical laboratories of the bureau of science of Manila and chief of the department of medical zoology in University of the Philippines, has taken up his work as associate professor of tropical medicine in the George Williams Hooper Foundation for Medical Research.——Dr. Charles E. Ide has resigned as health commissioner of Redlands and has been succeeded by Dr. Frank H. Folkins, who will give his entire time to the work.——Dr. Edmiston Darragh, formerly surgeon to the Consolidated Copper Mining Company, Cananea, Mex., has moved to Los Angeles.——Dr. James W. Richards has succeeded Dr. Harry E. Kirschner, as first clinical assistant at the Pottenger Sanatorium, Monrovia.

GEORGIA

Additions to Library.—The library of the Georgia Medical Society, Savannah, has been given 450 bound volumes by Dr. Isaac Minis Hays of Philadelphia.——Dr. William W. Owens, Savannah, has presented to the society an engrossed and framed copy of the notice of the meetings issued by the society in 1807.

ILLINOIS

Chicago

Personal.—Drs. John M. Kara and Duro Guca have sailed for Europe to enter the Red Cross work with Servia.——Dr. and Mrs. William W. Meloy and son have returned from Europe.——Dr. Grace L. Meigs has been appointed by Miss Julia Lathrop, chief of the children's bureau of the U. S. Department of Labor, as expert on sanitation on the staff of that bureau. Dr. Meigs is a graduate of Rush Medical College and has done special work under Professors von Pirquet, Finkelstein and Von Bokay. She has recently been attending physician in children's diseases in Cook County Hospital, and will act in a general advisory capacity to the bureau in matters of child health and hygiene.

Clinical Meeting of Pediatrists.—A clinical meeting was held under the auspices of the Chicago Pediatric Society, October 29 to 31. On the first morning, the clinic was held at the Northwestern University Medical School; the afternoon clinic, at the Sarah Morris Memorial Hospital connected with the Michael Reese Hospital, and in the evening, Dr. Arthur Kendall delivered an address on "The Relation of Bacteria to Summer Diarrhea in Infants." On the second morning, a clinic was held at the Children's Memorial Hospital; in the afternoon, visits were paid to the children's health stations, playgrounds, etc., and in the evening, a beefsteak dinner was given at the Auditorium Hotel with Dr. Frank S. Churchill as toastmaster. On Saturday morning, clinics were given at the Home for Destitute Children and Cook County Hospital; and in the afternoon, at the amphitheater of the Rush Medical College and the Annie Durand Hospital.

Wesley Memorial Hospital Fellowships.—The Wesley Memorial Hospital of Chicago has established five fellowships to be given yearly to those graduates in medicine who have clinical scientific problems that they wish to solve. The work will be done under a joint board made up from the staff of the Wesley Hospital and the laboratory departments of the Northwestern University Medical School; the clinical work to be done in the hospital and the laboratory work in the laboratory of the medical school. The problems are restricted to those having direct application to clinical medicine and surgery or the specialties. The fellowships are open to any graduate in medicine. The recipient of the fellowship will be required to devote his entire time during the first year, at least, to the prosecution of his investigation. It is hoped through these fellowships to correlate more satisfactorily than in the past the departments of clinical and scientific medicine.

INDIANA

Personal.—Dr. Charles A. Pfafflin, Indianapolis, returned from Europe, October 26.——Dr. Cassius E. VanMatre, New Castle, is reported to be critically ill at his home.

Small-Pox.—Thirty cases of small-pox have been reported brought to the isolation hospital at Whiting. Schools, churches and theaters have been ordered to be closed and the street cars passing through the city have been fumigated, the population being vaccinated. Small-pox is also reported from Porter.

Women Physicians Form Club.—Twenty-five women physicians of Indianapolis met October 18 and organized the Indianapolis Women Physicians' Club, one of the chief aims of which is to establish a hospital for the care of sick children. Dr. Hannah M. Graham was elected temporary chairman and Dr. Lillian B. Mueller, secretary.

KENTUCKY

Operating Room Donated.—An operating room, modernly equipped, was given by Charles R. Long to the Louisville Masonic Widow's and Orphan's Home, in memory of the father of the donor. The gift was accepted by President Fred J. Drexler of the board of directors and Dr. Ap Morgan Vance, president of the medical board.

Clinic Held and Hospital Dedicated.—A new hospital recently erected and equipped at a cost of $150,000 on the campus of the W. C. T. U. settlement school, Hindman, Knott County, was dedicated October 19, Dr. William S. Stucky of Lexington making the dedicatory address. Dr. Stucky, with Dr. George H. Wilson of Lexington and Dr. Isadore N. Bloom of Louisville, also held a four-day clinic at Hindman.

LOUISIANA

Louisiana Health Train.—The Educational-Hygiene exhibit, which is a constant feature in the health educational campaign in Louisiana, has been consolidated, and two cars owned by the State Board of Health are being used throughout the state for health propaganda. Educational-Inspection Car No. 1 is used as living quarters for the force. It contains drawing rooms, sleeping quarters, living quarters, bath room, lavatories, linen closets, kitchen and engine room in which a motor is installed that generates power for electrical models, fans and lights. The force consists of Dr. Dowling, president, inspectors, sanitary engineer, bacteriologist and office help. All mail for the central office is handled from the car. Educational Car No. 2 contains exhibits devoted to child hygiene, community hygiene and disease prevention. Motion picture entertainments are given, in addition to lectures and other exhibitions offered by the health train. On invitation the cars will be taken to the meetings of the Southern Medical Association in Richmond and to the meeting of the American Public Health Association in Jacksonville, making stops in large cities en route. For this trip a very complete exhibit on bubonic plague has been arranged which will show species of rats common in the United States, plague infected rats in various stages, species of fleas, exhibits of *Bacillus pestis*, models of rat proofing and pictures of specific features of plague eradication. Literature on different topics is to be distributed. On the return of the cars from Jacksonville, the annual trip through the state will be made and probably last four months.

MICHIGAN

Personal.—Dr. Cedric P. Sibley, Detroit, is on duty at the Military Hospital in Vienna.——Dr. James N. Garber, Detroit, was seriously injured in a collision of automobiles, October 25.——Dr. Robert B. Gaston has been appointed senior house surgeon of Grace Hospital, Detroit.

Foot-and-Mouth Disease.—Dairy cattle around Niles and Watervliet have been so seriously affected that a number of federal investigators have been sent to inspect every farm and every animal in Berrien County. A rigid quarantine on diseases of cattle has been established throughout the county except four townships.

State Tuberculosis Commission.—The president of the State Medical Society has appointed the following tuberculosis commission: Drs. Victor C. Vaughan, Jr., Detroit; Arthur F. Fischer, Hancock; Robert L. Dixon, Wahjamego; Arthur H. Burleson, Olivet; Alvin H. Rockwell, Kalamazoo, and Clarence M. Williams, Alpena.

Sanitary Survey of Copper Country.—Passed Assistant Surgeon Robert Olesen and assistant Joseph S. Bolten, U. S. Public Health Service, are making a sanitary survey of the Copper Country, including industrial conditions, sewerage and water systems, etc., and are also holding conferences with the township and village boards of health regarding the sanitary conditions of the community.

MINNESOTA

Health Week Proclaimed.—Governor Eberhart has issued a proclamation setting aside the week of November 29 to December 5 for the study of general health problems.

Results of Typhoid Vaccination in Hospital for the Insane.—A report issued October 14 by the State Board of Control shows that of nearly 2,000 who have received typhoid vaccination at the Fergus Falls Hospital for the Insane within the last two years, none has contracted the disease. Five cases have occurred in the same time among unvaccinated employees.

MISSISSIPPI

Yellow-Fever Fund.—It is announced that there still remains in a bank in Grenada a balance of $2,700 to the credit of the yellow-fever fund subscribed during the epidemic of 1878.

Personal.—Dr. Hyman M. Folkes, Biloxi, has been elected president of the Gulf Coast Life Insurance Company.——Dr. Joel C. Hall, Anguilla, has been appointed surgeon-general of the United Confederate Veterans, vice Dr. Christopher H. Tebault, New Orleans, deceased.——Dr. J. C. R. Gathings, Parchman, has resigned as superintendent of the Mississippi Penitentiary, Vicksburg, to take effect Jan. 1, 1915.

MISSOURI

District Society Organized.—The organization of the Northeast Missouri Medical Association was perfected at a meeting held in Memphis, October 7. The district includes the counties of Clark, Scotland, Schuyler, Lewis, Knox and

Adair. About twenty physicians were present and the following officers were elected: president, Dr. Clarence N. Frame, Ewing; vice-presidents, Drs. Phillip M. Baker, Memphis, and Alexander C. Crank, Canton; secretary-treasurer, Dr. John S. Gashwiler, Novinger.

NEW YORK

Tuberculosis Fee for Physicians.—After January 1 physicians of Syracuse will receive $1 for each case of tuberculosis reported to the Local Bureau of Health.

New York City

Award of Alvarenga Prize.—The Alvarenga Prize for 1914 has been awarded to Dr. Herman B. Sheffield for an essay entitled "The Fundamental Principles Involved in the Use of the Bone Graft in Surgery."

To Regulate Keeping of Chickens.—An attempt recently to put certain restrictions on those keeping chickens in the city limits met with considerable antagonism, and modifications were considered. At a recent meeting of the Board of Health it was ruled that roosters must not be kept in the city; that runways and coops must be whitewashed and sanitary, and that the chickens must not be kept within 25 feet of any inhabited or public building other than that of the owner, and none may be kept in tenement houses.

Cerebrospinal Meningitis.—The health department calls attention to a considerable increase in the number of deaths reported from epidemics of cerebrospinal meningitis. During the week ended October 24, ten deaths have been reported, as against one in the corresponding week of 1913. It is suggested that the increased mortality may be a forerunner of an approaching epidemic. The department, however, is well prepared to handle the situation, having a good supply of antimeningitis serum for free distribution.

Ask Appropriation for Inebriate Farm.—The Health Federation of the city of New York has asked the city to set aside $39,032 for use by the Board of Inebriety at the farm in Warwick, purchased by the city several years ago. A modern dormitory is now being built on the farm and existing buildings are being remodeled. When the work is complete there will be accommodations for several hundred inebriates on the farm. There are now eighty-six patients in city hospitals waiting to be removed to the country institution.

Health Advice for Policemen.—Commissioner Woods of the police department has distributed booklets to the policemen of the city on "How to Keep Well," which have been prepared by a committee of police surgeons, consisting of Drs. Arthur S. Vosburgh, Henry C. Webster and Edwin C. Fiske, acting under the direction of acting chief surgeon, Dr. Edward T. Higgins and Health Commissioner Sigismund S. Goldwater. It is especially emphasized that a low sickness rate means increased efficiency for the department and also contributes to the welfare of the men and their families.

Medical Inspectors for Defective Pupils.—In order to meet the necessity for medical inspectors of ungraded classes, the board of education has amended its by-laws so as to provide for them. The amendment requires that the applicants, in addition to graduation from a medical school recognized by the Regents of the State of New York, must have had two years' specialized experience in the treatment of nervous diseases of children, with special reference to mental defectives. It was further ruled that on the nomination of the Board of Superintendents the board of education might appoint such inspectors and assistant inspectors of public school athletics, and such inspectors and assistant inspectors of ungraded classes as it deemed necessary. Such inspectors and assistant inspectors shall be subject to the supervision and direction of the board of education.

NORTH CAROLINA

New Wing to Asheville Hospital.—Work will begin shortly on the new fire-proof wing of the Asheville Mission Hospital. The building will be fire-proof and will cost about $50,000.

Tuberculosis Day Observance.—The State Board of Health has prepared and distributed in churches and schools throughout the state an elaborate program for tuberculosis day, November 20.

NORTH DAKOTA

Personal.—Dr. Clinton E. Spicer, Litchville, has returned from abroad.——Dr. Arnt G. Andersen has disposed of his practice in Hillsboro to his partner, Dr. Syver Vinje, and has located in Minneapolis, Minn.

OHIO

Personal.—Dr. William Clyde Leeper, McConnelsville, has been elected president of the Eighth Councilor District Medical Society.——Dr. Henry M. Metcalf, Elyria, secretary of the Loraine County Medical Society, has been elected treasurer for the unexpired term of the late Dr. Evan Cameron.

Component Society Recognized.—The officers of the Ohio State Medical Association have notified the secretary, Dr. Lewis R. Culbertson, Zanesville, that they have recognized the Muskingum County Medical Society as the component society for that county. Members of the Muskingum County Academy of Medicine will be reinstated as members of the Muskingum County Medical Society on payment of all dues.

Trust Fund to Western Reserve University.—By the will of the late Liberty E. Holden, a trustee of the University, who died in 1913, his estate appraised at from three to six millions, is left to the trust fund, one-sixth of which, less $50,000, the Medical School of Western Reserve University is to receive eventually. The terms of the gift are very liberal and the income is to be devoted to research on problems on the cause and cure of disease.

Faculty Changes at Western Reserve.—Dr. Howard T. Karsner, assistant professor of pathology in Harvard Medical School, has been appointed professor of pathology and will begin his duties December 1.——Dr. Henry O. Feiss has been appointed full-time instructor in experimental medicine.——Dr. Gaius E. Harmon, Randolph, Mass., full-time instructor in hygiene; Bradley M. Patten, Ph.D., full-time instructor in histology and embryology and George E. Simpson, B.S., full-time instructor in organic and biochemistry.

PENNSYLVANIA

Sanatorium Opened.—The Third State Tuberculosis Sanatorium of Pennsylvania, located at Hamburg, was opened for patients October 26. The necessity for this institution is evident when it is considered that in addition to the 1,150 patients under treatment at Mt. Alto Sanatorium and the 400 who are receiving care at the Cresson Sanatorium, there is still a waiting list of more than 1,000. The new Hamburg Sanatorium will accommodate 550 of these. The institution was inspected by the governor and other officials of the state on October 24.

Personal.—Dr. Calvin N. Wherry, Chatham, has resigned as a member of the medical staff of the Cresson State Sanatorium——Dr. Walter J. Cathrall, South Bethlehem, is reported to have been adjudged insane and committed to the Rittersville State Hospital.——Dr. Charles C. Waggoner, Corry, while hunting near Garland, October 16, was accidentally shot in the eye by a companion.——Dr. Clair W. Burket, Altoona, fell while hunting near Spruce Creek recently, fracturing his left arm.——Dr. Henry X. Bonbrake, Chambersburg, has been admitted to the Chambersburg Hospital for treatment.—Dr. William C. White, medical director of the Tuberculosis League of Pittsburgh, has been elected president of the First North Atlantic Tuberculosis Conference.

Philadelphia

College of Physicians Residuary Legatee.—The late Dr. Morris Longstreth, who at one time held the chair of pathological anatomy in Jefferson Medical College and later was in practice at Cambridge, Mass., and Barcelona, Spain, made the College of Physicians of Philadelphia his residuary legatee.

Personal.—Dr. Ellwood R. Kirby has been appointed consulting and chief surgeon for the Masonic Home, Elizabethtown, Pa.——Dr. Thomas A. Benbow, an Australian, has resigned as house physician of Jefferson Hospital and has started for England to offer his services to the Royal Army Medical Corps.——Dr. Joseph C. Doane was named, October 27, by Director Harte, as the chief resident physician at the Philadelphia General Hospital. The position pays $4,000 a year.

Faculty Changes.—The Medico-Chirurgical College of Philadelphia announces the following faculty changes: Dr. Herbert H. Cushing, professor of practical anatomy; Dr. Ardrey W. Downs, professor of experimental physiology; Vernon K. Suydam, professor of physics; Charles E. Vanderkleed, professor of analytical chemistry; Dr. John H. Small, associate professor of bacteriology; Dr. Eugene A. Case, associate professor of pathology; Dr. Philipp Fischelis, associate professor of histology and embryology; Dr. Guy Hinsdale, Hot Springs, Va., associate professor of climatol-

ogy, Dr. Arthur C. Morgan, associate professor of medicine; Dr. John Stewart Rodman and Dr. John J. Gilbride, associate professors of surgery; Drs. Howard L. Jameson and Andrew Callahan, associates in medicine, and Dr. Robert F. Ridpath, associate in laryngology.

The Alvarenga Prize.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize being the income for one year of the bequest of the late Señor Alvarenga and amounting to about $250, will be made on July 14, 1915, providing a worthy essay is offered. Essays may be on any subject on medicine, but must not have been published. They must be typewritten and if written in any language other than English, should be accompanied by an English translation and must be received by Dr. Francis R. Packard, secretary of the college, 19 South Twenty-Second Street, Philadelphia, on or before May 1, 1915. Each essay must be sent without signature, but must be plainly marked by a motto and accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. The successful essay or a copy of it is to remain in the possession of the college. Other essays will be returned on application within three months after the award has been made.

WASHINGTON

Personal.—Dr. William N. Kellar, Tacoma, has been appointed superintendent of the Western Washington Hospital for the Insane, Steilacoom, succeeding Dr. Arthur P. Calhoun, Fort Steilacoom, resigned.——Dr. Alfred S. Oliver, Jr., who has been acting superintendent of the Western Washington State Hospital, Medical Lake, has been appointed superintendent of that institution.——Dr. Charles C. Hunt, Seattle, was the guest of honor at a dinner given by the Lee County (Ill.) Medical Society at Nachusa Tavern, Dixon, October 14.

WEST VIRGINIA

A Year's Tuberculosis Campaign.—Dr. Harriet B. Jones of Wheeling, director of the West Virginia Antituberculosis League, reports work done from Sept. 15, 1913, to Sept. 15, 1914, under a legislative appropriation of $9,900, the Baltimore and Ohio Railroad Company donating the use of a car and free transportation for six months. The car was fitted up in August with an exhibit, lighting plant and literature. No less than 100,000 people saw the exhibit in six months. Dr. Thurman Gillespy of Wheeling accompanied the car as lecturer. Dr. Jones preceded the car, talking in schools and giving lectures at night to adults. The statistics of the work done include 44 counties visited by the lecturers, 33 counties visited by the exhibit car, 624 talks given in schools to 53,354 pupils, 102 lectures to over 19,000 adults, 16 county teachers' institutes attended, lectures given to over 70,000 pupils and 250,000 pieces of literature distributed.

WISCONSIN

Medical Secretaries Elect.—At the annual meeting of the State Secretaries Association of Wisconsin, which is made up of secretaries of county medical societies, Dr. Joseph F. Smith, Wausau, was elected president; Dr. Mina B. Glasier, Bloomington, vice-president, and Dr. Henry W. Morgenroth, Oshkosh, secretary.

State Foes of Tuberculosis Meet.—The Wisconsin Antituberculosis Association met in Milwaukee, October 16, and elected the following officers: president, Dean Louis Reber; vice-presidents, Drs. Timothy L. Harrington, Milwaukee, and Gustave Windesheim; secretary, Dr. Clarence A. Baer, Milwaukee. Dr. Mazyck P. Ravenel, Madison, who resigned as president on account of his having accepted a position on the faculty of the University of Missouri, delivered his farewell address, in which he reviewed the progress in health education and legislation in Wisconsin during the last few years.

GENERAL

Southwest Physicians to Meet.—The ninth annual meeting of the Medical Association of the Southwest will be held in Galveston, Tex., November 10 and 11, under the presidency of Dr. Samuel S. Glasscock, Kansas City, Kan.

Meeting of Pan-American Physicians.—At the meeting of the executive committee of the Pan-American Medical Congress in Cincinnati, October 28, the following officers were elected: president, Dr. Charles A. L. Reed, Cincinnati; secretary, Dr. Ramon Guiteras, New York City; and treasurer, Dr. Henry L. E. Johnson, Washington.

Medical Examination of Canal Zone Children.—The annual examination of the children attending the Canal Zone schools took place during the week of October 26. By this means an accurate record of schoolchildren is expected to be kept, not only with reference to communicable diseases, but also in regard to defective teeth and defects in sight, hearing and the respiratory passages.

Examinations for Army Medical Corps.—The Surgeon-General of the Army announces that a preliminary examination for the Army Medical Corps will be held at various points in the United States, January 11. Applicants must be citizens of the United States, between 22 and 30 years of age, graduates of medical schools legally authorized to confer the degree of Doctor of Medicine, of good moral character and habits and shall have had at least one year of hospital training as an intern after graduation. Information regarding these examinations may be procured on application to the Surgeon-General, U. S. Army, Washington, D. C.

Railway Surgeons Elect.—At the annual meeting of the Association of Seaboard Airline Railway Surgeons at Petersburg, Va., October 19-21, the following officers were elected: president, Dr. Milton L. Wood, Montgomery, Ala.; vice-presidents, Drs. Robert L. Harris, Jacksonville, Fla.; Frank L. Eskridge, Atlanta, Ga., and Wilbur A. McPhaul, Lumberton, N. C.; secretary-treasurer, Dr. Jarrett W. Palmer, Ailey, Ga.; and member of the executive committee, Dr. Emmett H. Terrell, Richmond, Va. The association decided to meet next year in August at Wrightsville Beach, near Wilmington, N. C.

New Officers of the Mississippi Valley Medical Association.—At the fortieth annual meeting of the Mississippi Valley Medical Association held at Cincinnati, October 27-29, Lexington, Ky., was selected as the next place of meeting and the following officers were elected: president, Dr. Hugh Cabot, Boston; vice-presidents, Drs. Willard J. Stone, Toledo, Ohio, and Albert H. Freiberg, Cincinnati; secretary, Dr. Henry Enos Tuley, Louisville (reelected); treasurer, Dr. S. C. Stanton, Chicago (reelected), and chairman of committee arrangements, Dr. Carl L. Wheeler, Lexington, Ky.

Bequests and Donations.—The following bequests and donations have recently been announced:

Presbyterian Hospital, Chicago, one-third of the estate of Thomas Murdoch, Chicago, which was appraised at nearly $4,000,000, after the payment of specific legacies, by the will of Thomas Murdoch, Chicago.

Presbyterian Hospital, Children's Ward, $2,120; Margaret Etter Creche, $2,100; Bethlehem Creche, $1,975; Wesley Hospital Children's Ward, $1,875; Mary Thompson and Providence Hospitals, each $1,289; Outing for Crippled Children and Jackson Park Sanitarium, each $1,029, as the result of Children's Charity Tag Day in Chicago, October 24. There was donated for charities on Tag Day, nearly $47,000.

FOREIGN

Death of Professor Pawlik.—The death is reported of Dr. Karel Pawlik, professor emeritus of obstetrics and gynecology in the Bohemian University of Prague, aged 65.

New Institute of Hygiene at Madrid.—The *Siglo Medico* states that congratulations are in order for the new and elaborately equipped building just completed at Madrid to house the Instituto de Higiene de Alfonso XIII which had long outgrown its old quarters. Professor Ramon y Cajal has been at its head since it was founded in 1899, and is still director in chief. The extensive *Parque sanitario*, with its isolation buildings, is in charge of V. Cortezo, and R. Serret, one of the three editors of our exchange, is at the head of the vaccine department. The two other members of the editorial staff of the *Siglo Medico*, C. Cortezo and Pulido, are on the national board of public health.

American Red Cross Relief Work Abroad.—The American Red Cross, October 19, cabled to the American consul-general in Canton, China, a contribution of $5,000 from its contingent fund to aid in the relief of famine sufferers in central China. From the same fund $3,000 was cabled to Ambassador J. Morgenthau in Constantinople for the survivors of the earthquake in Konia Province, Turkey, where 3,000 persons were killed and many injured and made destitute. In response to the telegraphic appeal of Rear Admiral Howard of the United States Navy, Charles J. O'Connor, director of the Pacific division of the American Red Cross, has been authorized to buy $1,000 worth of pork and beans for the starving thousands in the vicinity of Acapulco. Secretary of the Navy Daniels has arranged to send the supplies to Acapulco on the naval collier *Nero*.

CANADA

University News.—McGill University will grant degrees to all fourth-year students who enlist with the Canadian expeditionary forces before the conclusion of the present college term. First, second and third year students will be given credit for full term's academic work; and on their return will be admitted to the class immediately above.

Montreal Wins in Vaccination Suit.—The Court of King's Bench, Montreal, has given judgment in a vaccination case where the parents of a child vaccinated by order of the Medical Department of Health and performed by an officer of the board of health, sought to recover $10,000 damages owing to subsequent paralysis of the arm. A jury had awarded $8,000 damages but the King's Bench has reversed this judgment and now the case has been settled in favor of the city. The physicians called as witnesses disagreed as to whether the paralysis had been caused by the vaccine or not, so the judge ruled the jury had no jurisdiction, as it was not a matter of fact but a matter of opinion.

Recognition of Ontario Physicians Abroad.—The medical faculty of Queen's University, Kingston, Ont., have adopted the following resolution: Whereas, a number of physicians registered in Ontario have volunteered for the Imperial army medical service, and have not been accepted because the Ontario qualifications are not recognized in Great Britain; Resolved, that in the opinion of the medical faculty of Queen's University the time is opportune to establish reciprocal relations between the General Medical Council of Great Britain and the Medical Council of Ontario, and, resolved, that the faculty suggest to the officers and executive of the Ontario Medical Council that a special meeting of the council be held at the earliest posible moment to deal with this important matter.

Personal.—Dr. Joseph O. Reaume, Windsor, has resigned as minister of public works of Ontario.——Dr. William G. Anglin, senior surgeon Kingston General Hospital, has volunteered for service in the second Canadian force.—Dr. James W. Good, Winnipeg, has returned from a trip round the world, in which he spent considerable time in the hospitals of Russia, China and Japan.——Dr. John S. Gray, Winnipeg, registrar of the Manitoba College of Physicians and Surgeons, has returned from England.——Winnipeg contributed the following medical officers to the Canadian overseas force: Drs. Claude E. Fortin, John A. Gunn, George S. Mothersill, Walter L. Watt, Percy G. Bell, J. F. Bell, Stanley A. Smith, John H. Leeming, John D. McQueen and William Webster.——Dr. George W. Ross is lecturing on therapeutics at the University of Toronto during the absence of Dr. Robert D. Rudolf in Europe.——Dr. William J. O. Malloch, Toronto, first assistant surgeon in the service of Dr. Herbert A. Bruce at the Toronto General Hospital, recently underwent operation for gall-stones and is recovering rapidly.

WAR NOTES

Splints Given to Red Cross.—The University of Pennsylvania Hospital has contributed to the American Red Cross, 300 pieces of woven wire splints for use in Europe.

Anticholera Vaccination.—The troops in Austria and Hungary are being vaccinated against cholera on an extensive scale, both those on the firing line and in the garrisons.

Celebrates Eightieth Birthday in the Field.—Dr. Hertwig of Berlin is now serving in the eastern German army on his third military campaign. He recently celebrated his eightieth birthday in the field. He began practice in 1860.

Courses of Lectures on Surgery in the Field.—Our Italian exchanges state that lectures on military hygiene and sanitation are being held in Rome and other cities and towns are urged to follow this example.

American Red Cross Expedition in Berlin.—Of the seven expeditions sent out by the American Red Cross, the one destined for Germany had arrived at Berlin by October 18, and passed on to the eastern seat of war.

Exportation of Drugs and Hospital Supplies Prohibited in Austria.—The list of articles includes vaccines and laboratory animals as well as phenol, mercury, strychnin, iodin, bismuth, materials for culture mediums, catgut, morphin, etc.

University Gives Ambulances.—Yale University has advised the American National Red Cross that it will give two ambulances for European relief work, one for Germany and the other for the American Ambulance Hospital in Paris.

Professor König Not Dead.—Our German exchanges of October 18 correct the notice they had previously sent out in regard to the death of Professor Friedrich König in the field. It was a younger brother, a captain of cavalry, who was shot in active service in the East.

Red Cross Hospital Trains.—The German Red Cross has equipped twenty-four hospital trains, each with dining car, four physicians, thirty-six attendants, bookkeeper and porter, and beds for 320 wounded. Nearly all the trains are in use and have rendered excellent service.

Hospital Ship Wrecked.—The British hospital ship *Rohilla*, en route to a Belgian or French port, bearing physicians, nurses and hospital supplies, ran on the rocks near Whitby, October 30, and was totally wrecked. One hundred and thirty of the passengers and crew were saved. All nurses, it is believed, were saved, but eleven physicians are supposed to have perished.

England's Queen Appreciates Work of Red Cross.—Queen Mary of England has communicated to Mrs. Lewis Harcourt, one of the honorary secretaries of the woman's war relief fund in London, her appreciation of the sending of the American National Red Cross Ship *Red Cross* with American surgeons and nurses, and quantities of hospital supplies in their hour of distress.

American Surgeons Commissioned in Russian Army.—A telegram from Petrograd announces that commissions as generals in the Russian medical service have been given to the two senior surgeons of the American Red Cross units assigned to service in Russia while the four junior surgeons have been commissioned as colonels in the medical corps. The units have been assigned to duty at Kiev.

Wounded in Brittany.—In a letter to Miss Mabel T. Boardman, chairman of the relief board of the American National Red Cross, written from Val Fleuri, Dinard, France, a pathetic appeal is made for hospital supplies for the wounded which number 42,000 in this corner of Brittany alone. The special needs are for wools for socks, wristlets and chest protectors; absorbent cotton and antitetanus serum.

Losses in German Medical Corps.—Up to October 24, it is reported, that the medical corps of the German army has lost 74 officers dead from wounds, 37 have been wounded, 13 are missing, 8 have died from disease and 3 are prisoners of war. ——In the medical branch of the Austria-Hungary service, 8 officers have been killed, 25 wounded, 1 is missing and 25 are incapacitated by reason of illness.

Organization of Welfare Work for Wounded Soldiers in Austria.—This work in Austria is divided into three departments: the direct care of the wounded, with central Red Cross headquarters at Vienna; the care of the families left dependent by the departure of the breadwinner for the front; and the care of the dependents left by soldiers who have been killed. Each branch has its separate office and information bureau, and receiving committee for donations.

Fiftieth Anniversary of the Geneva Convention.—This fall fifty years have elapsed since the Geneva Convention met to organize the systematic care of the wounded during war. The emperor of Austria in honor of the anniversary, which was celebrated with ceremony at Vienna, has founded an order with silver and bronze badges to be awarded to those in Austria-Hungary who distinguish themselves in Red Cross work either actively in the field or by contributions.

Canadian Hospital in London.—Surgeon-General Whitehead in command of the eastern district, in behalf of the war office, inspected the Queen's Canadian War Hospital, October 14.——The Anglo-Canadian Committee has raised $85,000 for the equipment of the institution. At present 60 beds are occupied by wounded from Antwerp. The staff includes Sir William Osler, physician in chief; Dr. Donald Armour, surgeon in chief, and Drs. Frazier and Wallace, assistants.

American Medical Journals and the War.—Our Italian exchange, the *Policlinico*, commenting on the present reduction in size and contents of so many of the medical journals of the world remarks: "The American medical journals scarcely seem aware of the terrible conflict going on in Europe. They are keeping alight the torch of medical science. They arrive unfailingly and serenely although with occasional delays of two or three weeks; then they appear in a bunch."

Medical Supplies for England.—The British War Relief Association, New York City, announces that five cases of medical supplies, a case of blankets, one of shirts and socks and two of children's clothing have been sent to the head of St. Andrew's Ambulance Association.——An order has been placed with a Philadelphia firm by the British government for 6,000 packages of tetanus antitoxin, and with another for

500,000 yards of muslin for bandages.——A firm in Reading, Pa., has contracted to make 50,000 stretchers to be sent abroad; 1,000 stretchers are to be delivered each week.

More Red Cross Personel to Go Abroad.—The American National Red Cross has decided to send two additional surgeons and six additional enrolled Red Cross nurses to England.——Two extra hospital units will sail for Servia on the steamer *Finland*, November 17. Extra Unit Number 1 is in command of Dr. Ethan Flagg Butler of Washington, D. C., with Drs. S. H. Hodge, Knoxville, Tenn., and James F. Donnelly, Stapleton, S. I., N. Y., staff physicians. Dr. Ernest P. Magruder, Washington, D. C., is medical director of Extra Unit Number 2, and the staff physicians are Drs. Clapham P. King and Morton P. Lane, both of Washington, D. C.

University of Vienna Buildings Transformed into Hospital.—Particulars are at hand as to the transformation of the university buildings at Vienna and Breslau into large hospitals. Linoleum has been laid over wooden floors, partitions erected and recitation rooms changed into bathrooms, etc., so that the whole presents the appearance of a modern and well equipped hospital. A. Fränkel is in charge at Vienna. To this hospital the wounded are transferred after they have been operated on or otherwise treated at the Hochenegg and Eiselsberg surgical clinics. Special arrangements have also been provided for treatment of outpatients. The university is paying the expense of this transformation of its buildings and of maintenance.

First-Aid Packet.—German physicians writing from the front comment with approval on the first-aid packets in use among the Germans. They are fastened in the front of the coat and are not carried in an inner pocket as the French soldiers carry theirs, so they are very accessible. The French packet is said to be hard to open and the dressing to be mostly absorbent cotton which is difficult to remove when the dressing is changed later, especially in case of jagged shrapnel or grenade wounds. The French also use lint to some extent. The German first-aid packet is surpassing all expectations. One physician mentions as a typical instance of what it can accomplish the absence of peritonitis in a case of extensive abdominal wound with protrusion of part of the liver. A comrade applied at once the first-aid dressing but the wounded man was obliged to stay where he fell until the second night and did not seem severely injured when he was brought in. Shrapnel wounds are said to suppurate in fully 85 per cent. of the cases.

Imported Drugs in Sweden.—According to *Hygiea*, it has been impossible for dealers in drugs to get into communication with French drug firms so that all pharmaceuticals of French make are cut off. Representations have been made by the higher authorities to Germany asking that Sweden might be exempted from the prohibition of exportation of pure phenol, mercury, caffein and the other drugs whose exportation was prohibited when the war broke out. But no exception is to be permitted in favor of Sweden. All pharmaceuticals which do not contain any of the prohibited substances can still be obtained freely from Germany. England has also prohibited the exportation of a long list of drugs, and it has been a difficult matter to obtain even the non-prohibited drugs and proprietaries from England. Switzerland has also decided not to allow the exportation of phenol, morphin and caffein, pantopon, codein and arecolin. On the whole, *Hygiea* concludes, physicians in Sweden will do well to be economical in the prescribing of drugs as it possibly may be difficult for the drug-stores to fill prescriptions calling for certain ingredients.

The Work of the American Hospital.—The work of the American Hospital in Paris has received great praise on account of its efficiency and adaptability to emergencies. Between August 12 and September 1, it converted the Lycee Pasteur at Neuilly into the American Ambulance of Paris, one of the best equipped war hospitals in Europe. In a fortnight the wing of the building was completed, operating theaters, anesthetizing and sterilizing rooms and a Roentgen-ray department installed and wards prepared. The American Colony in Paris is responsible for this work. The good work of the hospital is limited only by the amount of money subscribed for its support. It has at present 400 beds and desires to increase its capacity to 1,000. The cost of maintainance of the hospital is about $2 per patient a day although the nurses and physicians serve without charge. The hospital asks a donation of one-half million dollars which will enable it to do the great work it desires and to the fullest extent. It is at present under the charge of Dr. Joseph Blake, New York, Dr. Richard Derby, Boston, and Dr. C. W. Dubouchet, an American, who lives in Paris. Contributions may be sent through J. P. Morgan Company, 23 Wall Street, New York.

LONDON LETTER

LONDON, Oct. 23, 1914.

The War

ENLISTMENT

Young men to the number of 700,000 have enlisted for the new army. Their physique is admirable and a great improvement on that of the past. Thus twenty years ago 40 per cent. of recruits were rejected on medical examination; ten years ago 30 per cent., now only 20 per cent. The aggregation of such a body of men in a country which does not maintain a large standing army presents a new and serious problem in sanitation. A reform introduced in 1907 by Sir Alfred Keogh, Director-General of the Army Medical Department, whose reappointment after retirement was announced in my last letter, has proved valuable. He suggested that the health officers should combine in a voluntary organization with the object of preventing disease in the masses of men who would be mobilized in war time. The result is that wherever troops are about to be quartered the local health officer is consulted by the military authorities as to the means of obtaining the best sanitary conditions. He is also encouraged to visit the camps so as to advise regarding the removal of excreta and other matters.

THE USE OF VACCINES

Since the outbreak of war the Inoculation Department of St. Mary's Hospital has been busily occupied in preparing vaccines both for the British and the allied armies. It may be remembered that Sir Almroth Wright, whose appointment as consulting physician to the army in the field was announced in my last letter, is the director of this department. Nearly a million and a half doses of vaccine, representing approximately 166 gallons of fluid, have been produced. Not only antityphoid vaccine but also an "antisepsis vaccine" consisting of 500 million *Staphylococcus aureus* and 25 million *Streptococcus erysipelatis* in each dose of 0.5 c.c. has been produced. It is believed that this vaccine may be useful in cases of apprehended or incipient sepsis, while a smaller dose (0.05 c.c.) might be given when sepsis is established in the form of septicemia. The department is also supplying the vaccine to the allied forces; 200,000 doses have been sent to the French army, 100,000 to the Belgian army, and the same number to the Russian army. Sir Almroth Wright has gone to the front with his assistant Dr. Fleming to observe whether or not these vaccines are being used to full advantage and consider the possibility of supplying other vaccines. Another member of the staff of the inoculation department will probably go to Galicia to obtain a culture for cholera.

THE WOUNDED

The total number of beds in the auxiliary home hospitals amounts to 6,480. These hospitals are being served by between fifty and sixty voluntary aid detachments. Since the tide of war has turned in favor of the allies the number of British wounded arriving from the front has greatly diminished, but following the surrender of Antwerp and the evacuation of Ostend Belgian wounded are arriving in large numbers, and fully a thousand are distributed in the hospitals throughout England. There are also some French wounded. Many of the Belgians are suffering from diseases such as pleurisy, pneumonia and rheumatism induced by the hardships of war. It is pitiful to hear these brave people tell of the ruin and devastation of their country. They say: "Our fields are blackened, our homes destroyed, our loved ones murdered, taken prisoners or exiled. For years, perhaps decades, Belgium can be nothing more than it is now—a desert." The *Times* has raised a fund of two and a half million dollars for the purchase of motor ambulances to be used for the conveyance of wounded from the front and also received motor cars. It has thus been enabled to supply a fleet of 700 vehicles, which will be under the control of the British Red Cross. It must be remembered that these are additional to the transport of the Army Medical Corps. Special provision is being made for the wounded of the Indian troops. The Admiralty has supplied six hospital ships each of about 6,000 tons displacement and accommodating 350 cases, including 100 special swinging cots for severe cases. In addition the generosity of the Indian princes will provide other ships. Accommodation for the Indian wounded has

been provided at the great military hospital at Netley. Here use will be made of the Indian Field Ambulance, which consists of Indian students living in London, who some time ago, wishing to participate actively in the war, volunteered to form an ambulance corps. Another detachment has left for service on the hospital ships set apart for Indian soldiers. Comforts for the Indian soldiers in France are also receiving attention and their distribution is being arranged by Sir Havelock Charles, retired Surgeon-General of the Indian Medical Service, who has gone to France to study the problem. An institution known as the St. John Ambulance Association is proving of considerable service. In time of peace it trains men in ambulance work and arranges lectures and examinations by physicians. It has been in existence more than forty years and has issued certificates to a million persons; it was thus able to furnish trained orderlies to the army. For the first 4,000 vacancies in hospitals near the fighting line, at the base or in various parts of England and France it offered 20,000 volunteers. They are doing excellent work.

PARIS LETTER

Paris, Oct. 15, 1914.

Military Surgery

Two papers of present-day interest on military surgery were read October 13 before the Académie de médecine. One by Dr. Picqué, surgeon of the hospitals of Paris, was on the subject of the preservation of limbs in cases of wounds of the soft parts and fractures of the diaphyses. Picqué is a strong partisan of conservative methods. According to him, at the front military surgeons ought to strive, first of all, to avoid infection of wounds. In the hospitals at the rear, it is necessary to consider patients of two classes: those with aseptic and those with septic wounds. For the first, abstention from operation and infrequent dressings give the best results. Abstention from operation is preferable also in cases of moderate infection. In serious infections, especially those due to shrapnel and fragments of shells, it is necessary to follow the rules of septic surgery and exercise daily surveillance. Amputation is necessary in scarcely any cases except those of total gangrene. Wounded soldiers are young men, generally without organic defects, and capable of undergoing a slow but regular convalescence.

Dr. Tuffier, surgeon of the hospitals and *agrégé* at the Faculté de médecine de Paris, described the workings of the military health service, which he was enabled to study from the firing-line of the Vosges to the hospitals of the rear. Tuffier gave moving testimony to the courage, endurance and technical skill of the surgeons at the front, who are performing their duty in a remarkable way under very perilous conditions. The hospitals near the fighting-line continually run the risk of abandonment if there is an advance and of capture if there is a retreat. Therefore, only extremely urgent operations are performed. According to Tuffier's personal experience, abdominal surgery is not possible under such circumstances. Tuffier declares that it is necessary to return to the antisepsis of Lucas-Championnière and to the drainage of Chassaignac and that the French method of conservation of the limbs ought to be adopted. Non-lacerating gunshot wounds heal with a single dressing. Shrapnel wounds and fractures are serious because they are often infected. Thoracic wounds, even when they traverse the thorax, heal easily. Abdominal wounds ought to be let alone where facilities for operating on them are lacking at the front. The wounded man is left seated without being fed until he arrives at the hospital of the second line. At the rear, treatment is in accordance with the particular case. A serious complication is tetanus, which should receive preventive treatment by injections of antitetanus serum. The future method of procedure is antitetanus serum applied on the battle-field, even before the first dressing. Among other serious complications it is necessary to reckon gaseous gangrene and acute septicemia, which are treated with hydrogen peroxid, scrupulous cleansing of the wounds and good drainage.

The trains for the removal of the wounded are necessarily freight trains. Tuffier estimates that these trains by themselves are capable, if necessary, of removing five hundred wounded men per train while the evacuation of several thousand wounded must be carried out in a night. Thus in spite of all the devotion of the staff, the progress of these trains is necessarily a real *via dolorosa*. The establishment of canteens and railway station first air by the press (The Journal, Oct. 24, 1914, p. 1492) is commendable.

Personal

Dr. Walther, surgeon of the hospitals of Paris, at present detached physician-major of the ambulances of the government of Paris, has become a candidate for the seat left vacant in the section of operative medicine of the Académie de médecine by the death of Professor Reclus (The Journal, Aug. 15, 1914, p. 592). The academy has decided, on the suggestion of its permanent secretary, that since several of the candidates are in the army, elections for the places now vacant or which may become vacant shall not be held until the end of hostilities.

List of the British Wounded

The British Red Cross is now establishing a list of the British wounded in the French hospitals or ambulances, either in Paris or in the provinces. Many British families are ignorant of the fate of members who, wounded and received into French hospitals or ambulances, may have been carried as "disappeared" on the lists of the war office.

The Evacuation and Transportation of the Wounded

The evacuation of the wounded continues to command the constant interest of the public and the war department. Before the battle of the Marne, in consequence of the retreat of our troops and the necessity of not allowing the wounded to fall into the hands of the enemy, and since the battle of the Marne, because of the increase of the number of the wounded, there has been some disturbance in transportation. Of late, however, an effort has been made to coordinate the various services. The minister of war has charged Dr. Paul Chavasse, medicine inspector-general of the military health service, with coordinating the general working and organization of the service of evacuations. He will also see to the provisioning of the armies with sanitary supplies.

The three societies which compose the French Red Cross have been invited by the military health service to send means of transportation to certain stations in Paris. The following are the arrangements made: The selection of the wounded is made on arrival of trains by the army physicians. The slightly wounded soldiers remain on the trains. Those whose condition, though not serious, requires new dressings but who are transportable, are kept in the ambulances of the station to be removed the next day. Those who are not considered capable of being transported are put in the care of the Red Cross and placed in hospitals.

The Disadvantages of Reduction of Flesh in Some Heart Cases

October 16, Dr. C. Fiessinger read a paper on this subject before the Académie de médecine. He showed that it is an error to say that an individual has the weight belonging to his height; he has the weight belonging to his nutritive regimen. Vitiated nutrition, before it produces organic lesions in many cases manufactures fat. The adipose tissue seems to act as a toxic reservoir. If the patient reduces his flesh, it may happen that the toxic substances resulting from defective nutrition may, since the fat no longer affords them lodgment, distribute themselves through the other tissues and give rise to various complications. The composition of a reducing diet rich in albuminoid substances plays a part in causing such complications. The milk-and-water diet with reduction of albuminoids and of total foods is sufficient, in certain patients, to produce a crisis of gout within the third or fourth day. The sole cause seems to be the setting free of toxic substances contained in the fat. Dr. Fiessinger has already published an observation on three women affected with serious cardiac complications of the menopause, whose troubles became ameliorated on increase of flesh. Nervous diseases act in the same way as cardiac complications. Every physician has observed in some women a cessation of troubles coincident with the increase of flesh of advancing years. The fat, imprisoning the toxic substances, arrests the morbid symptoms just as growing thin causes them by the release of the same substances.

Foundation of a Dental Prize

By a decree just published, the Académie de médecine has been authorized to accept a gift of 78,000 francs ($15,600) from Drs. Julien Tellier and Francisque Martin of Lyons, the income of which is to be employed for a prize to be awarded triennially under the name of the *prix Claude Martin de Lyon*. The prize is to be awarded for manuscripts or printed works in French, by any authors whatsoever, on dental subjects (odontology, stomatology and buccofacial prothesis).

Marriages

F. RAYMOND TAYLOR, M.D., High Point, N. C., to Miss Rachel E. Farlow of Guilford College, N. C., September 25.

OSCAR LEE MCFAYDEN, M.D., Stedman, N. C., to Miss Pearl Bryant Jackson of Fayetteville, N. C., October 14.

ROWLEY SMITH FLAGG, M.D., Fairfax, Vt., to Miss Harriet Gertrude Hulburd of Rutland, Vt., October 7.

TROY ADAM SPITLER, M.D., Carey, Ohio, to Miss LaVerne Beck of Mount Blanchard, Ohio, recently.

WARREN WALLACE ST. JOHN, M.D., to Miss Grace Dorothea Staude, both of Troy, N. Y., October 5.

JOHN CARROLL WIGGINS, M.D., to Miss Ethel Follin, both of Winston-Salem, N. C., October 14.

PEARLIE WATSON LUTTERLOH, M.D., to Miss Grace Cole, both of Jonesboro, Ark., October 14.

CHARLES EDGAR BARKER, M.D., to Miss Viola Todd, both of Oklahoma City, Okla., October 7.

CARL ROBERT O'BRIEN, M.D., Boston, to Miss Lucille Teresa Cassidy of Bangor, Me., recently.

IRVIN HARRIS FARR, M.D., Holyoke, Mass., to Miss Ruby Beaching, at Holyoke, October 7.

BERT GEORGE WILCOX, M.D., to Miss Lillian Mine Bell, both of Joliet, Ill., October 14.

LAWRENCE GLENN GRIFFIS, M.D., to Miss Ruth Morris, both of Kalispell, Mont., October 7.

FELICIAN J. SLATAPER, M.D., to Miss Valbourg Berger, both of Houston, Texas, October 8.

LEVI H. SURBER, M.D., to Miss Dora M. Holladay, both of Indianola, Ia., October 7.

EMERY L. MEYERS, M.D., to Mrs. Ida Snow, both of Chico, Cal., October 8.

Deaths

Elias J. Beall, M.D. Tulane University, New Orleans, 1857; *ad eundem*, Missouri Medical College, St. Louis, 1876; Honorary, Missouri Medical College, 1880; a Confederate veteran with service as surgeon of the Fifteenth Texas Infantry and later as chief surgeon of General Walker's division; one of the organizers of the Fort Worth Medical College and for four years professor of principles of surgery and president of the faculty; one of the founders of the Protestant Sanitarium, Fort Worth; died at his home in Fort Worth, October 20, aged 80. As a tribute to the memory of Dr. Beall, his portrait and a chair in the faculty room of the Fort Worth School of Medicine will be draped in mourning for thirty days. At a special meeting of the Tarrant County Medical Society, October 21, addresses eulogistic of Dr. Beall were made by several of the members and it was decided that the society as a body attend the funeral.

Samuel David Huntington, M.D. University of California, San Francisco, 1897; a captain of U. S. Volunteers during the Spanish-American War with service in the Philippine Islands; afterward a student of theology of Milwaukee; died in the Good Samaritan Hospital in that city, October 20, from the effects of a stab wound of the breast, self-inflicted it is believed with suicidal intent, aged 45.

Harry Madison Jenkins, M.D. Starling-Ohio Medical College, Columbus, Ohio, 1908; a member of the Ohio State Medical Association; died in his office in Washington Court House, Ohio, October 16, from the effects of poison believed to have been self-administered with suicidal intent while mentally irresponsible, aged 34.

Arthur Scott Gilson, M.D. Medical School of Maine, Brunswick, 1894; a Fellow of the American Medical Association; surgeon to the Maine General Hospital and surgeon of the Board of Police Examiners, Portland; instructor in clinical surgery in the Maine Medical School; died at his home in Portland, October 9, aged 59.

Vaudois Hedwood Handley, M.D. Kentucky School of Medicine, Louisville, 1889; formerly of Sturgis, Ky., and later of San Diego, Cal.; while visiting the ranch of his son in California, October 3, was kicked in the face by a mule and died eleven days later from tetanus in the Agnew Hospital, San Diego, aged 50.

Gustav Burton Turner, M.D. Northwestern University, Chicago, 1912; a Fellow of the American Medical Association; formerly of Chicago, and an intern in St. Luke's Hospital; for a few months a resident of California; died in the Mount Zion Hospital, San Francisco, September 19, from diabetes, aged 27.

Walter G. Compton (license, Tennessee, 1889) a member of the Tennessee State Medical Association; died at his home in Westport, Tenn., October 22, from septicemia, aged 44.

Madison Monroe Holland, M.D. Vanderbilt University, Nashville, Tenn., 1884; died at his home in Statesboro, Ga., September 30, from cerebral hemorrhage, aged 54.

Velpeau Jackson Ward, M.D. Medical College of Georgia, Augusta, 1888; formerly of Berlin, Ga.; died suddenly at his home in Blackshear, Ga., September 18, aged 47.

Thomas Madison Schooler, M.D. Baylor University, Dallas, Tex., 1901; formerly a practitioner of Oklahoma; died in his apartment at Fort Worth, Tex., October 10.

John W. Carico, M.D. Tulane University, New Orleans, 1888; a practitioner and druggist of Cloverdale, Cal.; died at his home in that city, October 8, aged 53.

Joseph Armand Charette, M.D. Laval University, Que., 1894; of Montreal; was caught under an overturned automobile, September 18, and instantly killed.

Columbus L. Troutman, M.D. University of Louisville, Ky., 1894; of East Bernstadt, Ky., was shot and killed October 5, on a street in East Bernstadt, aged 45.

W. L. Barrett, M.D. Memphis Medical College, Memphis, Tenn., 1854; a Confederate veteran; died at his home in Covington, Tenn., October 9, aged 82.

Clement Chandler Larkin, M.D. University of Minnesota, Minneapolis, 1911; of Huron, S. Dak.; died at Point Pleasant, Minn., September 3, aged 29.

Bruce Livingston Riordan, M.D. McGill University, Montreal, 1880; University of Toronto, 1889; died at his home in Toronto, August 29, aged 55.

George Franklin Wise, M.D. Medico-Chirurgical College of Philadelphia, 1894; formerly of Jeddo, Pa.; died in Beaver Falls, Pa., July 11, aged 43.

Arthur C. Hanger, M.D. Missouri Medical College, St. Louis, 1886; died at his home in Cherry Box, Mo., October 13, from heart disease, aged 51.

Joseph Von Osinski (license, Indiana, 1897) for twenty years a practitioner of Indiana; died at his home in Laporte, Ind., September 30, aged 48.

Kenneth Laughlin Macleay, M.D. Dartmouth Medical College, Hannibal, N. H., 1885; died at his home in Newport, Vt., August 17, aged 43.

Thomas Arthur Campbell, M.D. Tennessee Medical College, Nashville, 1903; died at his home in Kodak, Tenn., October 10, from nephritis, aged 33.

William L. Turk, M.D. University of Tennessee, Nashville, 1892; of Gallion, Ala.; died in an infirmary in Selma, Ala., September 29, aged 48.

James Bacon Ware, M.D. University of Pennsylvania, Philadelphia, 1854; died at his home in Bridgeton, N. J., September 7, aged 83.

Minyard T. Colvin, M.D. University of Tennessee, Nashville, 1890; died at his home in Luttrell, Tenn., about September 30, aged 62.

Louis Charles Philippe Massicotte, M.D. Bennett Medical College, Chicago, 1890; of Keene, N. H.; died last month in Montreal, aged 56.

John Henry Kelley, M.D. Bellevue Hospital Medical College, 1875; died at his home in Parkersburg, W. Va., September 8, aged 61.

Calvin Shaw, M.D. Trinity Medical College, Toronto, 1898; died at his home in Cleveland, Ohio, October 12, from typhoid fever, aged 46.

Archibald Dunn Walker, M.D. Queens' University, Kingston, Ont., 1888; died at his home in Riverside, Cal., August 9, aged 49.

James L. Short, M.D. Hahnemann Medical College, Chicago, 1885; died at his home in Abilene, Kan., October 6, aged 75.

John McMillan Shaw, M.D. Queen's University, Kingston, Ont., 1886; died at his home in Lansdowne, Ont., September 22.

Alphonso Harris, M.D. Missouri Medical College, St. Louis, 1880; died at his home in Dallas, Tex., October 8, aged 67.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

ECKMAN'S ALTERATIVE

A Consumption Cure Fraud Uses a Philadelphia Newspaper as an Advertising Asset

Eckman's Alterative is a fraudulent consumption cure. It was exposed in THE JOURNAL, April 27, 1912. At that time an analysis of the preparation made in the Association's laboratory was published showing that it consisted, essentially, of alcohol, calcium chlorid and cloves. The only reason for giving further publicity to this cruel fraud is the fact that the Eckman concern is now running a series of advertisements, in which the impression is given that the medical profession, through THE JOURNAL and other medical publications, has endorsed Eckman's Alterative. The advertisements consist largely of quotations regarding the use of calcium (lime) in tuberculosis. By inference the reader is led to believe that wherever the use of calcium in the treatment of tuberculosis has been suggested by physicians, Eckman's Alterative has been endorsed. Nothing, of course, could be further from the truth.

The advertising of Eckman's Alterative has undergone the same change that has taken place in most medical advertising during the past two or three years. The "lie direct" has given place to the "lie with circumstance"; the outspoken falsehood has given place to the indirect falsehood; the definite statement that Eckman's Alterative will "cure consumption" has given place to inferential claims that mean the same thing; the word "consumption" has in many instances been eliminated from the advertising "copy," but other words have been substituted, which to the sufferer from consumption, mean exactly the same. Actually, the advertisements to-day are more dangerous than they were when their very outspoken falsity repelled a certain portion of the thinking public.

The various articles from this and other medical journals which the Eckman concern quote inferentially as references in favor of their cruel nostrum, have in fact nothing whatever to do in the remotest way with Eckman's Alterative. That calcium may have some value in the treatment of tuberculosis may be admitted. There are several drugs that may be given in selected cases of tuberculosis with some benefit, provided always that they are prescribed in accordance with the needs of the individual patient and provided further that the patient is warned at the time that the drugs are merely an incident. For here lies one of the strongest objections to all drugs sold as cures for consumption. The real treatment of pulmonary tuberculosis consists in painstaking and conscientious attention to the hygienic and dietetic rules laid down for the individual case. Every physician who has treated cases of consumption and every visiting nurse who comes in contact with such cases, knows that the hardest task in the treatment of this disease is to make the patient realize that drugs hold out no hope for cure but that reliance must be placed on other measures.

The average person believes, unfortunately, that any disease can be cured by taking something out of a bottle—if only one knows just what to take. On this fallacy is built up the vast superstructure of fraud in the exploitation of consumption cures and cancer cures. It is not always pleasant nor easy for the consumptive to so change his method of living as to stand some chance of recovering. It is so easy, comparatively, to buy a bottle of medicine and take the stuff three or four times a day in the belief that it will cure the disease. Here lies the great danger in the use of every consumption cure, whether it is sold as a consumption cure or as a "remedy" for "serious lung trouble" to quote from one of the later advertisements put out by the Eckman concern.

In addition to the advertisements appearing in newspapers, the Eckman Manufacturing Company publishes the full series of advertisements in booklet form and emphasizes that "these advertisements are appearing in the Philadelphia *North American* and other leading newspapers through the United States." The Philadelphia *North American*, which stands for high ideals in its editorial columns, is participating in the profits of an inhuman fraud when it accepts advertising contracts from the Eckman consumption cure.

Summed up the case against Eckman's Alterative is this:

1. It is sold as a cure for consumption, which it is not. In other words, it is a fraud.

2. It is sold under the claim that it contains no "narcotics or habit-forming drugs." Alcohol is both narcotic and habit-forming.

3. Its purchase means the use of money that frequently can be ill afforded and which should go into wholesome food and rational treatment.

4. Its use means that the consumptive is led to rely on a perfectly useless nostrum and to neglect the very things which offer him the only hope.

5. To claim that, because lime is sometimes used in the treatment of tuberculosis, therefore a preparation containing lime is a cure for consumption, is as illogical as it is cruel.

"AN APOLOGIST FOR PATENT MEDICINES"

Detroit Saturday Night Replies to the Specious Arguments of a Nostrum Exploiter

The article which follows is taken in full from *Detroit Saturday Night*, a virile weekly that expresses itself in no uncertain tones against medical and other frauds. The article, which appeared October 10, is by Jacob Nathan, the business editor of *Saturday Night:*

Carl J. Balliett, of the Foster-Milburn Co. of Buffalo, spoke before the Advertising Affiliation at its Detroit meeting last Saturday, taking for his theme:

"Granted that all honest business men tell the truth in their advertising, is it right for any publisher to close his columns to the advertising of any large line of business because there are some liars in it?"

That this theme may be better understood let it here be said that Mr. Balliett represents a line of business in which there are more liars than in any other avocation or profession in the world—the patent medicine business, or as Mr. Balliett prefers to call it, the manufacture and sale of proprietary medicines.

It will somewhat illumine the theme also if it be known that Mr. Balliett's company manufactures Doan's Kidney Pills, of which the American Medical Association says:

"Doan's Kidney Pills, or as they are sold in the British market, 'Doan's Backache Kidney Pills,' are in this country sold as a 'remedy'; in Great Britain they are a 'specific.' The difference is that between truth and falsehood. The British label also differs from the American label in having a larger list of diseased conditions for which the nostrum is recommended. * * * Doan's Kidney Pills are a fraud and a dangerous fraud. While they are advertised to 'cure all kidney ills,' the assertion is a false one. While they are said to be a 'simple vegetable remedy,' the analysis contradicts this."

Be it also known that Doan's Kidney Pills advertising has been thrown out of the columns of a number of American newspapers—several times as many numerically, as Mr. Balliett admitted to the ad-crafters. Hence Mr. Balliett's theme, because he insists the Foster-Milburn Co. should not be classed among the liars in the proprietary medicine business.

Mr. Balliett made the point that no medicine should be condemned until it had been tried, even advising the ad-men to be lenient with dear old Lydia Pinkham until they had personally and individually proved her remedies fraudulent.

We do not presume to say that Mr. Balliett paid his respects to the American Medical Association in the manner he did because of its little treatise on his kidney pill, but he did so in precisely the same temper that quacks and fakers usually display toward the medical profession. Declaring that there is $160,000,000 worth of proprietary medicines sold in this country annually, he declared that if you would divide that amount by the number of practicing physicians you would find that it meant an average of $2,000 out of the pockets of the medicine men. This, he inferred, was the motive of the American Medical Association in denouncing patent medicines.

And we wonder, too, if what Dr. Harvey W. Wiley had to say about Doan's Kidney Pills in the September *Good Housekeeping* had anything to do with Mr. Balliett's expressed contempt for the celebrated chemist and food and drug expert. Speaking of kidney cures in general, Dr. Wiley said:

"A very dangerous class of remedies are the kidney cures. For the most part they depend on potassium nitrate, just as the rheumatism cures fall back on salicylic acid and a cathartic. Warner's Safe Remedies are anything but safe if such a dangerous disease as Bright's disease is making progress while you neglect diet and hygienic living, to take this mixture of 'potassium nitrate, alcohol, glycerin, a trace of oil of wintergreen and vegetable extractive,' possibly taraxacum. The exact composition of these mixtures containing very small amounts of many different products cannot be determined, but this analysis indicates the character of the alleged cure, and potassium nitrate, its main ingredient, could hardly be called a 'vegetable material.' Like many other drugs, it has most undesirable side effects, and its miscellaneous ingestion in this way may be vicious in itself, besides the fact that loss of time in diabetes and Bright's disease may prove fatal. Doan's Kidney Pills belong in the same category, and depend also mainly upon potassium nitrate, with fenugreek, oil of juniper, and hemlock pitch for their effect. Think how the sales would fall off if all of these 'safe cures' and 'sure things' were sold for what they are, with a formula on the bottle; and a true statement as to their efficiency."

Of course Mr. Balliett doesn't like the American Medical Association. He doesn't like the newspapers that refuse to accept medicine advertising. He does not like Dr. Wiley or any other agency or person that is endeavoring to persuade the public not to purchase Doan's Kidney Pills. And because he doesn't like them it is only natural that he should speak as he did before the ad-crafters. So far as the newspapers that have eliminated medicine advertising are concerned, they took that course as a means of protecting the public against what Samuel Hopkins Adams has termed "The Great American Fraud."

"A NEW PHYLACOGEN"

A large number of so-called "independent" journals are carrying a "reading notice" announcing a new phylacogen for typhoid fever put out by Parke, Davis & Co. Commenting on this the *Wisconsin Medical Journal*, in its issue for October, 1914, says:

"When commercial greed is locking horns with scientific facts and wishes to prove its case scientifically it seems easy to collect much so-called proof. Reports of several hundred cases successfully treated by several hundred physicians impress certain minds as having the same weight in evidence as fifty cases treated by one man with all the necessary controls. Verily judgment is difficult.

"The very latest style in therapeutics is Typhoid Phylacogen featured in Therapeutic Notes, September, 1914. 'This preparation consists of a culture filtrate of the Bacillus Typhosus, ——— combined with an equal volume of the basic or Mixed Infection Phylacogen.' 'Reports have been made on the Phylacogen treatment of typhoid fever in 310 cases, with recovery in 283, or 91 per cent.' This is recommended subcutaneously or intravenously. It is well to remember that basic phylacogen is composed of the filtrates from the growth of five or six bacteria, such as colon, staphylococci, streptococci, etc. Now to get down to actual facts, we have known for a long time that the typhoid bacillus produces a specific toxin only when the bodies of the bacilli are crushed. An enormous amount of work has been done in an endeavor to produce a typhoid toxin in a bouillon culture which will cause immunity in injected animals. *It has never been done.* One does, however, get protein toxins which are not specific for typhoid infection, that is to say these toxins cannot produce immunity to typhoid infection.

"If physicians are to be instructed in modern therapeutics by salesagents of commercial firms then it seems time for us to close up our medical schools and send the students to school in drug and serum manufacturing houses."

The Reaction of the Normal Organism on the Environment.—If we contrast an ordinary developing child with one which is "backward," we will often notice that it is in initiative that the latter is primarily and fundamentally lacking; it is not so much that he has not got a brain as that he objects to use it. Whereas the healthy child will constantly, of his own accord, seek out new problems, and attempt zealously to master them, the defective child can only be induced to do so by extremely tactful handling and plodding perseverance on the part of the parent or teacher, failing such intelligently directed environmental stimulus, he may be allowed to remain all his life practically at the stage of infancy, although in all likelihood possessed of the capabilities of very much further, if perhaps not of complete, development.—Arthur J. Brock, *Edinburgh Med. Jour.*

Correspondence

Health Insurance and the Medical Profession

To the Editor:—To obtain the services of the medical profession for the benefit of the sick of the poorer classes has been the object of many a philanthropic movement. The free clinic, the public ward or the free hospital, all expressions of philanthropy, are made possible by securing the free services of medical men. The fraternal societies, as we know them to-day, are an indication on the part of the masses that they would prefer to pay their own way if such were possible. In Great Britain the matter has been thought sufficiently important for a government to make it the subject of important legislation. All we lack in either the United States or Canada is the right type of politician and it will be made a subject of legislation on this side of the Atlantic.

The free clinic and all similar charitable institutions are made possible by exploiting the medical profession in the name either of charity or of religion. In Great Britain, Mr. Lloyd-George has been gracious enough to exploit the profession in the name of politics.

Our profession has made great progress in all the sciences pertaining to the healing art, but our methods of giving services and receiving our fees have remained unchanged for generations. A portion of the public pays us a large fee, another portion a small fee and a third portion nothing at all. It is estimated that 33 per cent. of the urban population of Great Britain was affected by the national insurance act. In this country the percentage of population of any fair-sized city seeking medical aid through the free clinic, the public hospital service, the fraternal society contract physician or the general practitioner's charity list is placed by many men as fairly high—some say as high as 50 per cent.; scarcely ever do I find it put as low as 25 per cent., so that I believe legislation similar to the national insurance act of Great Britain introduced into either Canada or the United States will affect as large a proportion of the population in either country on this side of the Atlantic. In other words, the profession gets to-day nothing for 33 per cent. of its work—for work that is worth more to the public than it ever has been before, in a time when the average medical income is on the decrease and the cost of living on the increase. We are living in an age when the "gold standard" determines one's standing in society. Mr. Aloes from Pill Castle, who has made a fortune out of his knowledge of human nature and drives a limousine, is much more likely to be chosen for senator than is a doctor who scarcely makes a living out of his knowledge of medicine and rides around in his little roadster. The day is past when the doctor is respected because of his profession alone, and most of us are guilty of valuing our practices by our cash receipts for the year. Therefore, to be consistent, we should welcome some method of converting this 33 per cent. loss into a paying proposition.

It is obvious that there is something missing in our present-day civilization and that before society will be satisfied the services of the medical profession must be at the disposal of rich and poor alike. The national insurance act of Great Britain was introduced to fit in between the medical profession and the public, although in its proper place it has been found inefficient and unsatisfactory and is a fair example of how any question will be solved by commencing at the wrong end. If we as a profession can do anything to prevent the introduction of such an act into this country there is no time like the present. A national medical service has been suggested by some as the best solution. I can see only two objections to this myself, namely, that a number of things already under national control are not managed with that degree of fairness that would tempt us to place our destinies in the hands of politicians, and that the change from our present status would be too great. Reforms come slowly, and to be at all permanent must be introduced step by step. We are living in a commercial age and I believe our solution will be found by adopting commercial methods.

The business way of guaranteeing a man's loss through fire is by fire insurance, and the business way of guaranteeing man's loss through ill health should be health insurance. I

believe that by analyzing insurance methods we shall ultimately arrive at a solution that will be satisfactory to both public and profession. By accepting the good points of present insurance methods and supplying what is lacking to make it acceptable to the medical profession, we arrive at a scheme to guarantee the insured public the payment of their medical, surgical and hospital bills on the one hand, and guarantee the medical profession payment of their fees on the other hand. In working out any scheme of insurance on these lines if the following four points are adhered to it should be acceptable to the medical profession:

1. The services of the whole of the medical profession should be at the disposal of the whole of the public.
2. No one should be made the object of charity.
3. The average income of the medical practitioners should be increased.
4. The basis from which the actuary must do his reckoning should be the schedule of medical fees.

This should sufficiently protect the medical practitioners and should be sufficient guarantee to the public.

Any insurance scheme which has for its object the securing of medical attention for the masses depends for its successful working on the judgment of medical men, and should, therefore, as much as possible remain under medical control. If the thing depends on our judgment for its successful working, we should be rewarded.

This is, perhaps, the largest problem that the younger members of the medical profession will have to solve in their day and generation. It is worth every man's while studying, and as I am not through studying it myself I shall be glad to communicate with those members of the profession who are interested, and shall make their questions and objections the subject of a second paper on this question at a later date.

A. R. MUNROE, M.D., Edmonton, Alta.

The Office-Boy Perineum Operation

To the Editor:—In THE JOURNAL, May 18, 1912, I published a description of a perineal operation. The chief technical point consists in stabbing a pair of scissors down to a part of the levator ani muscle, opening the scissors *in situ* and thus stripping the muscle free from attachments. This leaves it in condition for accurate suturing and restoration of the most important part of the elastic floor.

This peculiar step in technic simplifies the operation to such an extent that I have spoken of the whole operation as the "office-boy perineum operation," because the office-boy could do it after obtaining one object lesson.

A number of other surgeons are at present claiming priority for this technical step in question. I do not know who first employed it. As it is to become a matter of history, perhaps it may be well to state that I have taught this step in technic since 1895. I have letters from members of the visiting staff of five different hospitals with which I am connected in the way of documentary evidence. My object in furnishing this evidence is not for the purpose of establishing a priority claim, but to protect myself against the charge that some one's else step in technic has been appropriated by me and published without reference to some earlier operator.

ROBERT T. MORRIS, M.D., New York.

Help Asked for American Hospital in Paris

To the Editor:—The following letter was recently received by me in regard to the American Hospital in Paris. The writer is Mr. Charles H. Mower, who has been a prominent member of the American Colony in London for the last twenty-five years. Should any of your readers care to subscribe to this good cause, I shall be pleased to receive and forward any sums, which will be duly acknowledged if sent to me at 279 Marlboro Street, Boston, Mass.

WALTER G. CHASE, M.D.

While in Paris, and particularly since the war, I became very much interested in the work of the American Hospital. The good work of the Hospital seems only to be limited by the amount of money which they are able to get subscribed for carrying it on. If they get sufficient money they will be able to increase their present capacity from 400 to 1,000 beds. I am informed by the Chairman of the Board of Managers, Monahan, that the cost of running the hospital per bed is 10 francs a day, in spite of the fact that all of the doctors and nurses are volunteering their services free. Their staff of doctors, nurses, cooks and other servants number already 200, all of whom have to be fed. The heating alone consumes about 12 tons of coal per month, costing about £300. They require about half a million dollars, as they contemplate being able to take care of 1,200 beds. The Hospital is entirely under American control, and is being financed by Americans, and it appeals to me very strongly because of its magnificent equipment and also, that being so near the seat of war it undoubtedly will receive many of the most serious cases, which cannot bear longer transportation.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

PLACE FOR A REST CURE

To the Editor:—I have a patient who is in a general run-down condition, and I wish to find a place where she can get care, proper diet and quiet, attractive surroundings. I should prefer some place in the South among the hills and mountains; among forests, where the climate is not too rigorous for the delicate woman to be out of doors, and yet where it is not too enervating, as it is in some parts of the South. I prefer a small place, providing she could get proper medical attention in such a place. One where tuberculosis or mental disorders are treated would not be satisfactory.

W. A. V., Jr.

ANSWER.—We shall be glad to forward information regarding such place or institution.

STATES WHICH REQUIRE PROPHYLACTIC FOR OPHTHALMIA NEONATORUM

To the Editor:—What states have laws requiring the use of silver nitrate in the eyes of the new-born?

A. B. M., Waycross, Ga.

ANSWER.—The following states have either laws or regulations for the prevention of ophthalmia neonatorum: Connecticut, District of Columbia, Idaho, Illinois, Iowa, Indiana, Kansas, Louisiana, Maryland, Maine, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, Porto Rico, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Washington and Wisconsin.

The law does not in all of these states specifically designate the kind of preparation to be used, the state boards of health being authorized either by direct mandate or by implication to determine this point.

The following states by law require the use of some form of prophylatic for ophthalmia neonatorum: Indiana, Louisiana, Maryland, Massachusetts, Missouri, New Jersey, New York, Vermont and Wisconsin.

In the following states the boards of health by regulation have authorized the use of silver nitrate: District of Columbia, Minnesota, Nebraska, New York, Porto Rico, Rhode Island, Utah and Washington.

TYPHOID VACCINATION AND IMMUNITY

To the Editor:—1. Does one attack of typhoid render a person immune? If so, for how long?

2. Is it advisable to vaccinate a child under 5 years of age for typhoid when moving to a typhoid locality?

3. Please give the procedure in administering the vaccine.

P. R. BRENTON, M.D., Tacoma, Wash.

ANSWER.—1. An attack of typhoid may leave a certain degree of immunity; how long this lasts is not known.

2. Vaccination of children against typhoid seems to have given good results and is advisable in the conditions mentioned.

3. Typhoid vaccine is administered hypodermically under aseptic conditions. The site of the inoculation should be sterilized by the application of tincture of iodin and the vaccine injected from a sterile syringe. The inoculation is usually made in three doses, the first consisting of 500 million killed bacteria. The second dose of 1,000 million bacteria is given after an interval of from a week to ten days and the third dose of 1,000 million after a similar interval.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Little Rock, November 10-11. Sec., Dr. W. S. Stewart, 404 Citizens Bank Bldg., Pine Bluff. Homeopathic, Little Rock, November 12. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock. Eclectic, Little Rock, November 10-11. Sec., Dr. C. E. Laws, Ft. Smith.

CALIFORNIA: Los Angeles, December 8. Sec., Dr. Charles B. Pinkham, 727 Butler Bldg., San Francisco.

CONNECTICUT: New Haven, November 10-11. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 10. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, New Haven, November 10. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

DELAWARE: Dover and Wilmington, December 8-10. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

FLORIDA: Palatka, December 2-3. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

KENTUCKY: Louisville, December 16-18. Sec., Dr. A. T. McCormack, Bowling Green.

MAINE: Portland, November 10-11. Sec. Dr. Frank W. Searle, 776 Congress St., Portland.

MARYLAND: Baltimore, December 8. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton, Baltimore.

NEBRASKA: Lincoln, November 11-12. Sec., Dr. H. B. Cummins, Seward.

OHIO: Columbus, December 8-10. Sec., Dr. George H. Matson.

PENNSYLVANIA: Philadelphia, December 1-3. Sec., Dr. N. C. Schaeffer, Harrisburg.

SOUTH CAROLINA: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

TEXAS: Waco, November 10-12. Sec., Dr. W. L. Crosthwait, Amicable Bldg., Waco.

VIRGINIA: Richmond, December 15-18. Sec., Dr. J. N. Barney, Fredericksburg.

Washington July Report

Dr. C. N. Suttner, secretary of the Washington State Board of Medical Examiners, reports the written examination held at Seattle, July 7-10, 1914. The total number of subjects examined in was 11; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 70, of whom 64 passed, including 9 osteopaths; and 6 failed, including 2 osteopaths. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
California Eclectic Medical College		(1914)	91.5
Coll. of Phys. and Surg., San Francisco		(1902)	85.4; (1903) 81.1
University of Colorado		(1913)	83.4, 86.4
Chicago College of Med. and Surg.		(1911)	96.3
College of Phys. and Surgs., Chicago		(1907)	76.5
Illinois Medical College		(1910)	77.8
Northwestern University		(1914)	92.2
Rush Medical College, (1899) 77.9; (1902) 75.3; (1913) 80.4, 87.1, 92.5; (1914) 75.			
University of Illinois		(1914)	85.7
State University of Iowa, Coll. of Med.		(1907)	81.7
Louisville Medical College		(1907)	77.4
University of Louisville		(1914)	83.2
College of Phys. and Surgs., Baltimore		(1905)	78.2
Johns Hopkins University		(1913)	85.8
University of Maryland		(1908)	77.4
Harvard University		(1912)	86.4
Detroit College of Medicine		(1912)	75
University of Minnesota, Coll. of Med. and Surg., (1905) 93.2; (1911) 89.4.			
St. Louis University		(1913)	88.4; 90.2; (1914) 83, 90.6
University Med. Coll., Kansas City, (1896) 81.1; (1904) 84.4; (1910) 80.			
Washington University		(1913)	94.2
Omaha University		(1898)	88.4
Bellevue Hospital Medical College		(1898)	85.4
Columbia University, Coll. of Phys. and Surgs.		(1911)	92.3
Eclectic Medical College, Cincinnati		(1911)	75
University of Oregon		(1914)	82.4, 87.1, 87.7, 88.1, 92.4
Willamette University		(1889)	86.9
Jefferson Medical College		(1913)	80.6; (1914) 91
University of Pennsylvania		(1910)	92.3; (1914) 90
Medical College of the State of South Carolina		(1892)	92.9
University of Tennessee		(1912)	75
Vanderbilt University		(1911)	91.5
Manitoba Medical College, Winnipeg		(1914)	81.8
McGill University, Quebec		(1905)	82.2; (1914) 79.8
University of Helsingfors, Russia		(1913)	81.8

College	FAILED	Year Grad.	Failed
Northwestern University		(1894)	1
Johns Hopkins University		(1913)	1
Wisconsin College of Physicians and Surgeons		(1902)	1
Royal Medical College, Stockholm, Sweden		(1899)	1*

* Withdrew.

Book Notices

ARTERIOSCLEROSIS: A CONSIDERATION OF THE PROLONGATION OF LIFE AND EFFICIENCY AFTER FORTY. By Louis Faugeres Bishop, A.M., M.D., Clinical Professor of Heart and Circulatory Diseases, Fordham University, School of Medicine, New York. Cloth. Price, $3.50. Pp., 383, with illustrations. New York: Oxford University Press, 1914.

Unfortunately this book does not seem to discuss this most important subject clearly; or neither does it inform the reader as to what is really known about it to-day. This book is a plea for the author's theory that arteriosclerosis is caused by eating habitually many proteins and large quantities and that it can be prevented or mitigated by a "few-protein" diet. By "few-protein" he means a diet, the proteins of which are derived from a single source and not as ordinarily from many sources simultaneously as from meat, fish, fowl, eggs, milk and vegetables.

The following quotations from various parts of the book will make clear his leading idea:

> The key to the riddle of arteriosclerosis I believe lies in just this sensitization of individuals to particular proteins, or to be more specific, to split products of particular proteins. . . . .
>
> The truth is not all found in popular explanations with such trite names as intestinal putrefaction, but is found in the ultimate destination of food substances and their relation to the cells. . . . .
>
> Arteriosclerosis seems to me often to develop as a result of damage done by some material derived from food to which the tissues are idiosyncratic. The damage often comes about gradually without disagreeable symptoms. The substances at fault are in all probability split products derived from the breaking down in the intestines of nitrogenous food derived from eggs, fish, meat and soups. Which of these foods supply the product doing the damage can only be determined by experiment with the individual under observation. . . . .
>
> The individual eating the great variety of protein foods found in a modern dietary is laying himself open to the attack of many different kinds of amino-acids and other split products, any one of which may be the one which is to do him harm. If he cuts out one-half of his proteins, he is by that much safer. If he is willing to do with a single protein, he is almost certain, on the theory of chances, to escape that which will do him damage.

The author admits that a "low-protein" diet or small quantity of protein does good, but believes that his "few-protein" diet is more certain to do good. He denies that the action of microbes on protein produces the toxin which causes the lesion of arteriosclerosis, or at least denies that it usually does so. But he advances no proof that his theory that it is some protein or amino-acid made from it which does, unless the statement that "on practical grounds, the few-protein diet is to be recommended because it is successful," can be regarded as proof. The author has not digested and assimilated and built his theories and practice on such modern knowledge as that during digestion all proteins are split into amino-acids and absorbed into the blood as such, and that some proteins contain all the kinds of amino-acids needed for the maintenance of tissue health and that others are lacking in one or another which is necessary. Nor does he seem to realize that proteins are from the physiologic point of view very complex and that what he calls a "few-protein diet" affords many amino-acids to the individual who eats it; sometimes more kinds than might be obtained from a mixture of certain proteins. Fortunately the proteins of milk which he urges as the best "few-protein" food for the relief and prevention of arteriosclerosis contain all of the needed amino-acids. He is most diffuse in his style. Almost every chapter contains digressions from its subject and often long and wearisome ones. The important chapter on the chemistry of the proteins contains fewest digressions, for little of it is written by the author. Six pages are quoted from Cathcart. Fourteen pages are quoted from Underhill. There is a scant page in all written by the author, welding these quotations together. The book contains reproductions of roentgenograms and polygraph tracings. Some of the latter are poor. If a reader will pick out the author's practical suggestions for treatment he will obtain useful ones; though his theoretical explanation of the mode of action of the treatment which he advises is most doubtful. The key to treatment is a simple diet, small or moderate in quantity, in which cheese is substituted for other protein food (vegetable proteins he regards as harmless) and regular, free catharsis, preferably by oleum ricini. He condemns salines as harmful.

Medical Gynecology. By Samuel Wyllis Bandler, M.D., Adjunct Professor of Diseases of Women, New York Post-Graduate School and Hospital. Third Edition. Cloth. Price, $5 net. Pp., 790, with 150 illustrations. Philadelphia: W. B. Saunders Company, 1914.

In preparing this well-known volume for its third edition the author has undertaken a thorough revision of the entire field covered by the subject matter. In its general arrangement there is no material change, the classification being at first clinical, according to symptoms, and second, pathologic, according to local or general disease processes. The various topics are viewed from the points of view of the symptoms, the disease, the bimanual and microscopic findings, and the general physical and nervous state. Thus there is presented a brief but comprehensive summary of the topic under discussion, followed by a more exhaustive consideration of the conservative treatment, operative procedures having been viewed as a last resort. The relation which pelvic abnormalities bear to the physical and mental state of the woman is constantly borne in mind, so that diagnosis and therapeutic method is not limited to the female pelvis. This is nowhere better demonstrated than in the new chapter devoted to the consideration of the internal secretions. Here in the space of fifty-three pages the reader finds a concise presentation of this vast and complex subject. The relation of the various glands producing internal secretions to pathologic and normal states in women has been considered in accordance with the most recent research of the various German investigators as well as the work of Cushing on the pituitary body. Certainly no more fitting place for the discussion of these questions can be found than in a volume dealing with medical gynecology. In this respect the author has brought his subject matter up to date and produced a work of definite value to the physician and to the student of gynecology.

Nervös. Zwanzig Gespräche zwischen Arzt und Patient. Von Dr. Ludwig Scholz, Direktor A. D. der Provinzial-Irrenanstalt in Kosten. Paper. Price, 4 marks. Pp., 188. Berlin: S. Karger, 1914.

In twenty short chapters, so-called conversations, the author popularizes the entire subject of psychotherapy, beginning with the definition of nervousness and ending with a philosophy of life. He handles his theme in the form of questions and answers, the patient asking the question, the physician answering. The author assumes for the patient a great deal more intelligence than we can actually credit him with. However, it must be admitted that the German patient is usually intelligent and capable of following a line of abstract reasoning. The book may be put down as a compend of Dubois' psychotherapeutic views, explained in the form of questions and answers. The brochure can safely be placed in the hands of those German-speaking neurasthenics and hysterics who possess the necessary intelligence to follow the author.

Psychology in Daily Life. By Carl Emil Seashore, Professor of Psychology in the State University of Iowa. Cloth. Price, $1.50 net. Pp., 226, with 17 illustrations. New York: D. Appleton & Co., 1914.

This volume is in the Conduct of Mind Series, which aims to supply a foundation for the practical application of psychology. The more didactic chapters are introduced by essays on play, serviceable memory and mental efficiency, considered from the point of view of mental health. Then mental laws are discussed, and are shown to explain the phenomena of illusions. In this section there are various entertaining diagrams. Laboratory methods are shown as applied to the measurement of musical ability. The subjects are selected merely for their illustrative value and are not meant to cover the entire field. The book reveals the practical use which may be made of psychology in everyday life, and gives some excellent suggestions.

Scraps. By A. G. Field, M.D., LL.B. Cloth. Pp., 88. Des Moines: Welch Printing Company, 1914.

In this book Dr. A. G. Field has compiled various papers, addresses, etc., published by him during a long period of human service. It is a reminder that many physicians daily are silently and conscientiously serving their fellow men in wide fields of endeavor.

Miscellany

Public Health Service Report on Friedmann Treatment

When, two years ago, Friedmann announced the discovery of a new treatment for tuberculosis, the immense publicity given to the announcement prompted the Public Health Service to appoint a committee to investigate the claims of the alleged cure. A board consisting of Surgeon John F. Anderson, director of the Hygienic Laboratory as chairman, and Past Assistant Surgeon A. M. Stimson of the Hygienic Laboratory as recorder, was appointed for this purpose. It will be remembered that some difficulty was experienced in securing the entire cooperation of Dr. Friedmann and that in the *Public Health Reports* of May 16, 1913, a progress report was published which said, "Without presenting in detail the condition of patients under observation, we are in a position to state that the effects so far observed do not justify that confidence in the remedy which has been inspired by widespread publicity." The board of investigation has now presented its final report[1] containing the results of both clinical observation and laboratory experiments. Clinically the board observed the treatment of ninety-four cases. A number of the patients belonged to the third stage according to the Turban method of classification, but many of these third-stage cases were in excellent general condition, without fever, of good body weight with little cough and expectoration, and stationary or very slowly progressive lesions. Dr. Friedmann was disposed to criticize this material, although his published papers warranted the expectation of cure in similar cases. On the other hand, Dr. Friedmann refused cases of the first stage on the ground that since they were already doing well, the beneficial effects of the treatment would not be as apparent as in those having more pronounced symptoms. In the report, abstracts of the histories of the cases are given which show, generally, no particular change in condition except such as might be expected for cases of pulmonary tuberculosis under ordinary methods of treatment. Anderson and Stimson note two classes of exceptions. They state that good results have been reported in some cases. It is explained that by this is meant simply that "the improvement noted was of such degree as is not commonly observed in the general run of cases. In no single case was this improvement such that it could not be paralleled in the experience of any physician having extensive acquaintance with tuberculosis." In other cases the record shows that the results were bad. The investigators say

> "By 'result unusually bad' we mean that the course of the disease following treatment was distinctly worse than would be expected in the general run of cases. Here again we must concede that no single case taken by itself would be unparalleled in an extensive experience."

The claim of Friedmann that his material is harmless is not sustained by the results of the investigation. The investigators conclude from the study of the clinical cases as follows:

> "The preparation used by Dr. Friedmann in our cases was not entirely harmless, inasmuch as it frequently produced abscesses or discharging lesions at the site of the injection. Moreover, there is presumptive evidence that it may cause damage to a tuberculous person. For this reason we believe that its promiscuous injection into tuberculous patients is unjustifiable.
>
> "There is evidence that this preparation exerts a specific action when injected into persons suffering from tuberculosis, which in the majority of cases treated with the number of injections which our patients received is insufficient to materially alter the course of the disease, in a small minority of cases redounds to the patient's advantage, and in another small minority results in definite injury.
>
> "The nature of the claims, the cases cited, and the general tone of Dr. Friedmann's article are such as to create the impression that his methods represent a great advance over previous methods of treating tuberculosis. The observations here recorded do not bear out this impression.
>
> "It is realized that the claim will be made that our patients did not receive as protracted a course of treatment as might have been administered if they had been continuously under Dr. Friedmann's care, and that had they received more treatment the result might have been dif-

1. Hyg. Lab. Bull. 99, October, 1914, on the Friedmann Treatment of Tuberculosis. This bulletin may be obtained from the Superintendent of Documents, Washington, D. C., at 10 cents per copy.

ferent. To this claim we can answer: First, that many of the brilliant results which he reports in his article, and which we must assume to be representative, were obtained with but one or two injections; second, that the failure of our patients to receive further treatments was due to Dr. Friedmann's negligence, unprofessional conduct, and commercial greed, primarily, and secondly to the alarm engendered on the part of the health authorities locally responsible by the unfavorable course taken by the disease in certain patients, apparently as a result of the injections."

The laboratory studies consisted of culture of the material on various mediums with observation of the morphology and staining reactions of the Friedmann bacillus. Morphologically and in staining reaction, the Friedmann bacillus showed considerable variation. In general the morphology was indistinguishable from that of tubercle bacilli and the grouping was often characteristic of the pathogenic organism. The animal experiments continued over fourteen months. One hundred and eighty guinea-pigs, thirty rabbits, sixteen monkeys and eight tortoises were used. The animals were weighed weekly and the temperatures of some were taken daily or twice daily. Some of the experimental evidence indicates that the organism is not harmless. Thus, one monkey died after an inoculation with the Friedmann bacillus, and the necropsy showed the presence of clumps of acid-fast bacilli in the liver and spleen. This monkey had reacted negatively to the von Pirquet test before the inoculation with Friedmann bacilli. Two rabbits inoculated with the Friedmann bacillus and afterward with bovine tubercle bacilli showed a certain degree of immunity, but this appears to be no greater than was shown by some of the control rabbits and further examination showed that the tuberculous process was advancing in all the animals, both those which were treated with Friedmann's remedy and the controls. In the attempt to immunize guinea-pigs, the final average duration of life for all treated guinea-pigs was 61.8 days and the average for all controls, 71 days.

The authors summarize their laboratory studies as follows:

"The organism used by Dr. Friedmann is an acid-fast bacillus, morphologically similar to the tubercle bacillus. Culturally, the organism may be distinguished from organisms heretofore recognized as tubercle bacilli.

"Some of the cultural characteristics can be artificially modified.

"It is relatively but not completely a virulent and apparently may in very rare cases cause a tubercular process on inoculation (Guinea-Pig No. 11).

"Inoculation with the Friedmann bacillus in the doses used caused, as a rule, hypersusceptibility to bovine tuberculosis in the guinea-pig and rabbit, the treated animals dying earlier, on the average, than the untreated.

"In a few instances the animals which received the Friedmann culture were apparently somewhat resistant to infection, but all showed tuberculosis at autopsy (Guinea-Pigs Nos. 3, 33, 35, and Rabbit No. 1). Neither curative nor protective action against natural or inoculation tuberculosis was shown in monkeys. Acid-fast organisms were repeatedly found in previously healthy guinea-pigs over 100 days after treatment with the Friedmann organism. Dr. Friedmann claimed they 'are never found in the guinea-pig body, even after a short time.' The material used by Dr. Friedmann for the treatment of human beings was found to be at times contaminated with staphylococci."

The following are the general conclusions of the investigation:

"The claims made by Dr. Friedmann for his method of treating tubercular infections are, in brief, that, by means of injections of a living acid-fast organism, harmless of itself, he is able to cure cases of tuberculosis, pulmonary or otherwise, which have not already advanced to that hopeless stage where death is imminent. From the manner of presenting these claims and from the fact that successes only and not failures are reported, the reader of these claims is bound to assume that such results are the rule; in other words, that a sovereign remedy for tuberculosis has at length been discovered, and incidentally that a method has been devised for the administration of living acid-fast organisms which avoid abscess formation, a complication which has hitherto limited their employment.

"The results of the investigation here reported do not confirm the claims made by Dr. Friedmann. We find, in brief, that the preparation used by him is not strictly devoid of dangerous properties of itself, still less so when injected into tuberculous subjects; that the favorable influencing of tuberculous processes by his methods is certainly not the rule, and that if we are to ascribe to the Friedmann treatment the improvement noted in a few cases, we are equally bound to impute to it the serious retrogression observed in other cases; and finally that the phenomenon of abscess formation has not been avoided by Dr. Friedmann's methods.

"We find that the organism used by Dr. Friedmann differs in important cultural characteristics from any heretofore recognized tubercle bacillus.

"The subcutaneous and intramuscular inoculation of animals with the Friedmann organism caused the formation of abscess in over 25 per cent. of the animals treated.

"The treatment of animals with the Friedmann organism—rabbits and guinea-pigs—either before or subsequent to infection with virulent tubercle bacilli, is followed, as a rule, by an increased susceptibility to the disease.

"Inoculation of monkeys with the Friedmann culture did not show either curative or protective action in those animals against tuberculosis."

SUMMARY

The investigators summarize their conclusions in the following succinct statements:

The claim of Dr. F. F. Friedmann to have originated a specific cure for tuberculosis is not substantiated by our investigation.

The claim of Dr. F. F. Friedmann that the inoculation of persons and animals with his organism is without harmful properties is disproved.

Medicolegal

Evidence and Damages in Action for Malpractice in Treating Fracture of Clavicle

(*Duffy vs. Charters* (*Mich.*), *147 N. W. R. 541*)

The Supreme Court of Michigan affirms a judgment for $1,080 damages in the plaintiff's favor, for alleged malpractice in the treatment of an oblique fracture of the left clavicle. The plaintiff's claim, supported by his own testimony and that of two others who were present, was that when the defendant came to his house all he did was to pick up his arm and place it diagonally across his breast so that the points of the fingers of the left hand were against the lower part of the right shoulder, above the armpit and below the top of the shoulder; that thereupon he applied bandages, which the defendant claimed was done in the approved method known as Sayre's dressing, but, it was claimed by the plaintiff, was not done as Sayre's method required. Whether the defendant was negligent in that he did not use a proper method in reducing the fracture was the question.

A medical witness produced on behalf of the plaintiff was asked a hypothetical question based on what the lay witnesses testified was done by the defendant when he put on the bandages. It was urged that the question was incomplete and so insufficient as to have no value in assisting the jury in determining the defendant's responsibility. The question did not contain what the defendant claimed he did in reducing the fracture, but stated substantially what the plaintiff claimed he did, as testified to by the witnesses present. Another physician described the proper method to be used in reducing such a fracture. The court holds that the testimony of the experts being based on the testimony of the plaintiff's witnesses, it was proper to have their answers stand. The question of the value of their evidence and that of the other witnesses for the plaintiff was for the jury, and was properly submitted by the trial court.

It was contended that there was a fatal variance between the plaintiff's declaration and attempted proof of a want of proper union of the broken ends of the clavicle. The declaration charged failure to put the bone or bones of the shoulder properly in apposition and to use the proper means for so placing and keeping them in apposition. The plaintiff argued that the false or fibrous union shown by the proofs was the natural result of imperfect apposition, as set forth in the declaration, and that it was therefore not necessary to specifically allege it. This was supported by the testimony of the physicians, who testified that the first step in the treatment of such a fracture is to get the ends of the bone together and keep them there, if possible, and, unless this is done, no perfect union results. The court thinks the declaration was sufficient to warrant receiving this evidence.

The jury were instructed that, for the pain and suffering which the plaintiff would have actually sustained by reason of this broken clavicle and its treatment, if properly treated, he could not recover damages, because the defendant was not responsible for that. But for the pain and suffering which were extra, if any, which was caused by the defendant, the plaintiff could recover. Under the issue in this case, it was entirely proper to submit to the jury the question of compensation for extra pain and suffering.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, St. Louis, Dec. 28-30.
Amer. Assn. for Study and Prevention of Inf. Mortal., Boston, Nov. 12.
American Physiological Society, St. Louis, Dec. 27-30.
Amer. Public Health Association, Jacksonville, Fla., Nov. 30-Dec. 5.
Medical Association of the Southwest, Galveston, Nov. 10-11.
Medical Society of Hawaii, Honolulu, Nov. 28-30.
Society of American Bacteriologists, Philadelphia, Dec. 29-31.
Southern Medical Association, Richmond, Nov. 9-11.
Southern Surgical and Gynecological Assn., Asheville, N. C., Dec. 15-17.
Western Surgical Association, Denver, Dec. 18-19.

MINNESOTA STATE MEDICAL ASSOCIATION

Annual Meeting held at St. Paul, Oct. 1-2, 1914

(Concluded from page 1602)

Typhoid Prophylactic Vaccination in Two Thousand Cases

Dr. C. C. Burlingame, Fergus Falls: Prophylactic vaccination against typhoid has seemed to furnish absolute protection to some 2,000 persons, some of whom have undoubtedly been exposed. It has failed to cause much discomfort and has been accomplished by no accident of any kind. The administration of vaccine at regular intervals produces a positive or atypical Widal usually within thirty days in about 94 per cent. of cases. This blood reaction is quite variable and becomes negative with comparative rapidity. Although this reaction has disappeared in the majority of cases, clinical evidence indicates that the immunity continues. The administration of vaccine at irregular intervals appears to have the effect of retarding or inhibiting the development of blood-changes and may or may not have influence on the degree of immunity afforded. There is apparently some evidence in favor of adopting the ten-day interval for vaccination rather than the seventh day.

DISCUSSION

Dr. R. R. Mullin, Minneapolis: It has been clearly shown by the work done at Fergus Falls that we have in the use of antityphoid vaccine a method that is easily employed and easily adapted to protecting the insane against typhoid fever. Dr. Burlingame says about 94 per cent. of the patients will show a positive Widal reaction sometime after the vaccinating process has been undertaken. This corresponds closely to what is thought to be the percentage of cases in which the Widal will occur in actual typhoid. In a small percentage of the cases we fail to get a Widal after the vaccinating process, and so, too, in actual typhoid there is a small percentage of cases in which apparently it seems it is impossible to get a Widal reaction.

Dr. C. L. Scofield, Benson: The efficacy of typhoid vaccination has been definitely settled. The town in which I live has gone through a severe epidemic of typhoid. In point of numbers as to population it was the most severe epidemic the state has ever known. One in every twenty of the whole population had typhoid. On the first day of August our first case appeared. In twelve days from the time the first case occurred, the trouble was located in the water supply, and the water was treated with hypochlorite, and the source of infection was removed in about four weeks. During that time all of our 2,000 people had been exposed to the infection. We vaccinated over 1,400 people. There were no severe reactions. After six weeks we are able to say that we have not yet had what we call a secondary case.

Dr. L. Ulrich, Minneapolis: No case of typhoid fever ought to be dismissed without an examination of the feces and urine to determine whether or not the case is a typhoid carrier.

Case of Splenic Anemia; Early Splenectomy and Necropsy Two Years Later

Dr. Thomas S. Roberts, Minneapolis: There was nothing in the history of the patient suggestive of the etiology of the disease. There was a marked leukocytosis soon after operation, which persisted and increased to the end. The average number of white cells in eight counts before operation was 4,925; the lowest, 2,700; the highest, 6,500. The average of twelve counts after operation was 15,985; lowest, 9,000; highest, 25,000. There was throughout this case a rather unusually high hemoglobin percentage, the general average being 52 per cent. The average color index was eight; highest, one; lowest, six. A notable irregularity in the shape and size of the red cells was always present, and during the last year became very pronounced. Gastric and intestinal hemorrhages occurred only after the removal of the spleen. There was no jaundice or pigmentation of the skin even during the Banti's stage. There were several periods of improvement, two especially prolonged and pronounced, suggesting recovery, but there was no corresponding improvement in the condition of the blood. Splenectomy, even though done early, did not, contrary to the usual experience in these cases, arrest the disease or modify its course in any way. The clinical diagnosis of uncomplicated splenic anemia was apparently confirmed by the necropsy. The only other important pathologic condition was a moderate grade of parenchymatous nephritis, but this did not seen sufficient to account for the death of the patient, and, moreover, the progress of the case to the very end was like that of splenic anemia and not nephritis.

DISCUSSION

Dr. S. Marx White, Minneapolis: It is not necessary to differentiate splenic anemia from Banti's disease. It is the opinion generally that we are dealing with one and the same condition. The term splenic anemia is used particularly for those cases in which the anemia is prominent or has not developed to the point which would correspond with the classical original description which Banti gave it. The results of the surgical treatment by splenectomy would tend to confirm the idea that Banti originally advanced, that the anemia is due to increased hemolytic action on the part of the spleen, or, at least, that we have in the spleen a very important link in the chain of changes which are characteristic of the disease, and which produce the anemia, and which cause the progress of the disorder.

Dr. William J. Mayo, Rochester: The removal of the spleen is not so serious an operation as we had previously supposed. According to the statistics based on early splenectomies, the mortality varied from 25 to 50 per cent., but at present the mortality from the removal of this organ is very small, provided the patient is in fair condition otherwise.

Avoidable Errors in the Diagnosis of Cardiac Insufficiency

Dr. Charles Lyman Greene, St. Paul: Two great problems lie along the line of prevention in the early recognition of decompensation. Any proper comprehension of cardiovascular ailments must rest on the primary and basic clinical fact that the true problem is always the state of the myocardium. With respect to the subjective symptoms, they are many and varied; few of them are peculiar to cardiac disease, and the fundamental factors in their interpretation are: (1) The relation of their onset to concurrent or antecedent physical exertion, psychic excitation, or a toxemia; (2) their association with the lesser grades of demonstrable dilatation; (3) especially in the case of the middle-aged patients, and to a less degree in younger persons, their relation to excitement or emotional strain; (4) the favorable response both of subjective symptoms and of any increased cardiac outline to cardiac stimulation with or without physical rest or regulated exercise as may be indicated. It would be difficult or impossible to make a positive diagnosis of cardiac insufficiency on the basis of subjective symptoms alone, save in the cases of typical angina pectoris major, which is usually unmistakable.

Medical Education and the Medical Profession

Dr. E. P. Lyon, Minneapolis: The modern scientific medical school has become a necessity. In this necessity three elements are involved: 1. The material equipment for science training, including buildings, laboratories with proper apparatus, hospitals with proper equipment and adequate patients. 2. The faculty, who should be men of exceptional

training and high character, active in productive scholarship and especially endowed as leaders and teachers. 3. The library, which is the accumulated capital of science, whose wise investment gives light and power to teaching and research. All of these essentials to science training are hard to get and very expensive. The individual student cannot get them for himself exclusively. They must exist and must be provided through some form of cooperative effort. What more natural than that the cooperative unit supplying these facilities should be the state?

Medicine is a public function. The condition arises partly from legal enactments which place various positive duties on doctors. Medical education is an accepted part of public policy. What we need to do is to see that medical education is more adequately and fully supported. It is the duty of the medical profession, as that body of citizens who most clearly recognize this need, to urge it emphatically and constantly. A second inevitable result of the progress of medicine has been the rise of specialism. No man can reach the highest perfection in all parts of medical practice. If he desires to excel he must concentrate on a single field.

The Cancer Problem

DR. WILLIAM J. MAYO, Rochester: Why has the public become so confirmed in the belief that cancer is incurable and how has this pessimism been fostered? One unfortunate result of the inquiry into the influence of heredity on the causation of cancer has been the encouragement of a belief that cancer is hereditary and therefore carries a stigma with it. The person who has been successfully operated on for cancer conceals the nature of his malady with the same solicitude he would probably conceal the fact that he had "done time" in a penitentiary. Of the hundreds of patients who have had cancer and who have been cured by operative means the public knows little or nothing, while those who have had cancer and been operated on without success are known to all.

There is no evidence that would lead to the belief that cancer is hereditary. This is equally true of "cancer houses" and "cancer towns." Small towns in older settled countries have more cancer than new towns; they have more people of a cancer-age; the younger people have left for new fields.

A good diagnostician will seldom mistake syphilis for cancer. Yet the liability to this mistake has been dwelt on and greatly magnified, and many individuals have advanced from the curable to the incurable stage while an effort was being made through antiseptic treatment to eliminate the possibility. The Wassermann reaction has fortunately come to our aid and to the patient's rescue.

Mistakes in diagnosis from lack of careful examination is the most common cause of failure to recognize malignant disease in time for a curable operation. A too high percentage of patients with cancer are subjected to inefficient operation by inexperienced men. Because the disease is early it appears as though it might be easily cured and men who would not think of operating where a radical operation was to be done, will often make a small operation—futile, hopeless.

The surgeon has had a great share in creating the feeling of hopelessness which exists among the laity and discouraging the general practitioners by attempts at radical operation in plainly incurable disease or extensive palliative operations which fail to palliate.

Radio-active substances have a field of usefulness in superficial growths and inoperable disease, but these agents should not be used in early growths curable by operation. The embryonic cell, such as the cancer cell, has less vitality than the normal cell and is injuriously affected by heat. The Percy method of using heat raised to such a degree as to coagulate the embryonic cells by a slow cooking process is a distinct advance.

Great benefit in diagnosis before operation has come from the radiograph and at the operating table by means of the frozen section. The first enables us to know in a large percentage of cases what we are going to find and the latter gives the microscopic diagnosis while the operation is in progress.

The prophylaxis of cancer is exceedingly important. Let us say to the public: "Go to your physician at once on the discovery of any sign or symptom of irritation about warts, moles and benign tumors, or ulcerations, chronic inflammatory processes or injuries, however slight, which fail to heal promptly." When the laity understand that all sources of irritation carry with them a deadly significance, the prevention of cancer will have been greatly advanced and the percentage of curable cases which come to the only known cure—operation—will be enormously increased.

DELAWARE STATE MEDICAL ASSOCIATION

One Hundred and Twenty-Fifth Annual Meeting, held at Wilmington, Oct. 12-13, 1914

The President, DR. H. W. BRIGGS, Wilmington, in the Chair

Puerperal Infection

DR. J. J. JONES, Wilmington: I am in favor of conservative surgery wherever possible. In cases of incomplete abortion, if I cannot remove remnants of placenta with the Bell curet, I leave them alone. I pack the uterus, using 1-inch tape, with a solution of tincture of iodin, phenol (carbolic acid), glycerin and thiol.

DISCUSSION

DR. WILLARD SPRINGER, Wilmington: I do not think any one uses sharp curets nowadays. Why does Dr. Jones put such a shotgun combination into the uterus instead of packing it with iodoform gauze?

DR. GEORGE I. MCKELWAY, Dover: There is no word quite so much abused as that word "conservative." The best possible conservation is the conservation of the patient and not of a lot of diseased tissues. Too much cannot be said about delay in operation in cases whenever pus is concerned. Most men have learned that the best thing to do with a boil is to open it before pus forms. It is best to operate very quickly in cases of puerperal infection rather than to wait. The two fingers constitute the best curet in cases of puerperal infection and retained placenta. The hand can be introduced into the vagina in its entirety, two fingers introduced into the uterus, the other hand on the outside of the abdomen, and the uterus can be cleaned out absolutely and thoroughly.

DR. SAMUEL C. RUMFORD, Wilmington: I do not think that many of the men who do much of this work use the sharp curet. A dull curet, or better, the fingers, will clear out the foreign material and shorten the woman's convalescence.

DR. J. J. JONES, Wilmington: I use the combination that I spoke of in place of iodoform because I have used iodoform and found that there was some poisonous effect from it. The mixture which I use is not strong enough to corrode the endometrium, and yet the glycerin in it acts as a depleting agent to the uterus. There might have been a time when the finger was the best curet, but I believe that time has passed. We have something better than the finger to-day, and better still than to manipulate much is to leave it alone and drain the uterus and Nature will do the rest. I have handled hundreds of these cases and I have the first patient yet to die of waiting. I have had pus in the abdomen, pus in the joints and pus everywhere. Improve the condition of the patient to fight the trouble she has. Do not operate immediately. Find out whether the patient can stand the operation.

Some Cases Treated by Physical Therapeutics

DR. WILLIAM MARSHALL, Milford: Since the beginning of the year I have been using different types of electrical treatment in a variety of cases. I have found autocondensation to be very effective in reducing high blood-pressure and giving relief to symptoms associated therewith. In high tension cases it is necessary to abstain from heavy meals, to cut down the amount of liquid and proteins ingested and to avoid worry, overwork, exposure, constipation and excesses of all kinds. My experience in the treatment of menorrhagia by

means of the Roentgen ray and the treatment of catarrhal conditions of the nose and ears has been very gratifying. I have been able to relieve the pain of neuralgia and neuritis by means of a few applications of the high-frequency current through the medium of a vacuum tube.

DISCUSSION

Dr. Henry J. Stubbs, Wilmington: The high-frequency current will reduce blood-pressure. The question arises how much and when to reduce blood-pressure. Treat once or twice a month to keep up the effect. This current has some effect on the artery and we do not want to produce too much change in the arteries when a patient is from 50 to 60 years of age. Keep up treatment to get the effect of softening the deposit in the arteries. I have been disappointed in the treatment of angina. Where we have high pressure without neuralgia of the heart I get excellent results. I have had patients with pressure of 240 to 270.

Dr. Albert Robin, Wilmington: I wish to report failures. One case was that of a woman between 50 and 60 years of age who had slight arteriosclerosis. The blood-pressure would rise to 190 and stay there for a considerable time. The nitrites would reduce it; so would rest in bed, on exclusive milk diet, but then it would come up as soon as she got on her feet. I had a high-frequency apparatus put in her bedroom and told her to use it very day. The treatment was given every day for months. Reduction of pressure did occur to the extent of 20 or 30 points, but it would soon come up again, and as far as any permanent results are concerned I saw none. At present the woman is in the same condition as before. In all probability the high blood-pressure is compensatory and we may probably come to the point later on when we shall decide not to try to reduce the pressure unless it produces decided symptoms. Another point is that arteriosclerosis is characterized by the existence of fibrous tissue in the blood-vessels. When you destroy the fibrous tissue it is replaced by more fibrous tissue; fibrous tissue replaces itself invariably. The fibrous tissue cannot be dissolved.

Dr. H. A. Cleaver, Wilmington: What little experience I have had in high-frequency and static work has been such as to convert me from disbelief to reasoning. I have had two evidence in my own person. I have had sciatica until I was frantic with the pain; ⅓ grain of morphin gave me no relief. The static machine relieved me in less than twenty minutes. I treated a man who had sciatica. He had been under treatment by others for months without getting relief. The second treatment with the high-frequency current relieved him completely.

Dr. H. K. Stubbs, Wilmington: We know that the success of electricity depends largely on the Morton wave. You can get it only on a static machine and in no other way. The coil is the most essential thing you can use. I do not think it cures everything, but there are marvelous successes. We get the results. That is what the patients want.

Dr. William Marshall, Milford: High blood-pressure is often compensatory, but sometimes it will go up so high that compensation is lost. In these cases the only drugs I have found useful are digitalis and strychnin. They will bring the pressure down and they are the only drugs that will.

Referred Pain in Gynecologic Conditions

Dr. Samuel C. Rumford, Wilmington: A normal healthy woman should be no more conscious of her pelvic organs than the average schoolboy is of his heart, but unfortunately so many abnormal conditions exist in women that their discomfort calls for attention. Nature has so placed the uterus and ovaries that they swing freely in the pelvis and are exempt from blows, jars, etc. When the uterus leaves its normal position either because of inflammatory adhesions or a lax condition of its suspensory ligaments then its natural balance is upset, nerves are pulled and pressed on and veins become congested, with a resulting amount of discomfort to the woman. The posterior positions, however, are the ones most apt to cause ovarian discomfort, as the tubes and ovaries easily slip into the culdesac, where, if they do not become inflamed and adherent, at least they are subjected to more pressure than when in their original position. Backache is a very constant symptom of gynecologic conditions and is explained by the rich distribution of sympathetic nerves supplied to the genital tract which act reflexly on the spinal cord. Individuals vary in their power of nerve resistance as in other ways, and we quite commonly see one woman with a gross pathologic condition in the pelvis who suffers much less than another who may be a nervous wreck because of some minor defect. It is our duty to help these nervous and hysteric women who offer some real lesion, for their mental suffering is often very great and, if not relieved, may become serious. The right lower abdominal quadrant of women is the most difficult area of their anatomy in which to make a satisfactory diagnosis in all cases, for there are situated in this region so many sources from which painful symptoms may arise. Such cases are often diagnosed only at operation.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

October, XXXV, No. 10, pp. 527-574

1 Cortical Connections of Red Nucleus. L. Archambault, Albany.
2 *Use of Normal Horse Serum for Prevention of Hemorrhage in Nose and Throat Operations. C. F. Theisen and N. K. Fromm, Albany.
3 Acute Ileocolitis of Infancy. D. V. O'Leary, Jr., Albany.

2. **Use of Normal Horse Serum.**—In eight cases reported by Theisen and Fromm the average coagulation time before injection of the serum was 5.18 minutes, and after injection 4.12 minutes, making an average decrease in coagulation time of 1.06 minutes. Considering the comparative safety in the use of serum, and the great lessening of the danger of postoperative hemorrhage, the authors advise that it should be used whenever an operation must be undertaken in a subject of the hemorrhagic or hemophilic diathesis.

American Journal of Obstetrics and Disease of Women and Children, York, Pa.

October, LXX, No. 4, pp. 545-688

4 Anatomic Study of Very Early Tubal Pregnancy; Decidual Reaction in Ectopic Gestation. M. Caturani, New York.
5 Pituitary Extract in Obstetrics. S. J. Druskin, New York.
6 *Tracheloplasty, New Operation for Relief of Sterility Due to Stenosis of Cervix Uteri. E. A. Schumann, Philadelphia.
7 Removal of Both Breasts, with Subsequent Pregnancy and Entire Absence of Labor Pains. W. E. Parke, Philadelphia.
8 Case Report Illustrating Certain Dangers in Use of Intra-Uterine Stem. W. R. Nicholson, Philadelphia.
9 *Total Non-Protein Nitrogen of Blood in Toxemias of Pregnancy. C. B. Farr and P. F. Williams, Philadelphia.
10 Scopolamin Narcophin Seminarcosis in Labor. J. A. Harrar and R. McPherson, New York.
11 Use of Scopolamin in Obstetrics. A. J. Rongy, New York.
12 Thyroid Gland and Its Degenerations in Relation to Gynecology and Obstetrics. C. W. Barrett, Chicago.

6. **Tracheloplasty for Sterility.**—The procedure employed by Schumann depends on the excision of a portion of the cervical endometrium and its replacement with a strip of mucous membrane covered with flat squamous epithelium and derived from the mucosa of the posterior vaginal vault. The operation in detail is as follows: Under ether anesthesia, the cervix is dilated to fully 1½ inches with the Goodell dilator and the uterus curetted or not as the indications demand. A strip of the cervical mucosa 1 centimeter in width is then removed from the center of the posterior lip of the cervix and extending from the internal to the external os. The entire thickness of the mucosa is to be removed, down to the muscularis, and the edges of the denudation are to be smooth and regular.

The cervix is now drawn upward out of the way and a strip of mucous membrane is cut from the posterior vaginal vault, the top of the strip corresponding to the upper attach-

ment of the vagina to the cervix. The vaginal strip is cut to fit the denudation in the cervical canal, and the lower margin is left attached to the vagina for purposes of nutrition. The resulting denuded area in the vaginal vault is drawn together by interrupted catgut sutures and the defect closed. The strip of vaginal mucosa, free except for its lower extremity, is then inserted into the canal previously cut in the posterior cervical wall and fastened in place by a few interrupted sutures of fine catgut, and the operation is complete. From five to seven days later, when the vaginal insert has become closely adherent to the tissues of the cervix and its nutrient blood supply is well established, the narrow band connecting the vaginal strip with the vaginal floor is severed with scissors and any redundant tissue trimmed away. The end result is a cervical canal having in its posterior wall a gutter of mucosa covered with flat squamous epithelium, which permits the free ingress of spermatozoa no matter how great the degree of cervical spasm or stenosis may be.

9. **Non-Protein Nitrogen of Blood.**—As a rule the total non-protein nitrogen of the blood does not exceed 30 mg. per 100 c.c. of the whole blood in a normal pregnancy. In those pregnant women who have renal changes associated or not with toxic manifestations, as convulsions, there is usually a slight and in most cases a definite increase in the total non-protein nitrogen. But the increase bears no relation to the severity of the symptoms. The degree of retention corresponds to that seen in parenchymatous nephritis. The amount of phenolsulphonephthalein eliminated varies so with the clinical picture that the use of this test does not appear to Farr and Williams to be of much value either as a diagnostic or prognostic aid in the toxemias of pregnancy.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

June, I, No. 12, pp. 815-892

13 Beriberi. E. B. Vedder, U. S. Army.
14 Educational Methods for Use in Antimalarial Work. H. R. Carter, Baltimore.
15 Malarial Investigations in United States by U. S. P. H. Service. R. H. von Ezdorf, Mobile, Ala.
16 Prevention of Malaria and Its Relation to Drainage of Swamps and Other Collections of Water. I. W. Brewer, New York.
17 Administration of Emetin to Young and Debilitated Children. N. Barlow, Cuyamel, Honduras.
18 Rheumatic Malarial Fever. N. Barlow, Cuyamel, Honduras.
19 Ulcus Interdigitalis Fetidum. N. Barlow, Cuyamel, Honduras.

Archives of Internal Medicine, Chicago

October, XL, No. 4, pp. 453-608

20 *Relation of Methods of Disposal of Sewage to Spread of Pellagra. J. F. Siler, P. E. Garrison, U. S. Army, and W. J. MacNeal, New York.
21 *Normal Presystolic Sound. E. W. Bridgman, Baltimore.
22 Periarteritis Nodosa; Report of Two Cases. A. R. Lamb, New York.
23 *Latent Hypertrophy of Heart in Nephritis of Children. H. Wessler, New York.
24 Non-Specificity of Carbohydrate Tolerance Tests. J. C. Friedman and S. Strouse, Chicago.
25 Potassium Content of Cerebrospinal Fluid in Various Diseases. J. Rosenbloom and V. L. Andrews, Pittsburgh.
26 *Relation Between Phenolsulphonephthalein Excretion in Urine and Non-Protein Nitrogen Content of Blood in Human Cases. C. Frothingham, Jr., and W. G. Smillie, Boston.
27 *Point to Be Considered in Use of Abderhalden Reaction. E. L. Ross and H. D. Singer, Kankakee.
28 Specificity of Cholesterin with Syphilitic Serums and of Cholesterin-Reinforced Heart Antigen in Wassermann Reaction. I. C. Walker, Boston.
29 *Botulism. Food-Poisoning Apparently Due to Eating of Canned String Beans. Report of Fatal Case. R. L. Wilbur and W. Ophüls, San Francisco.
30 *Normal Peculiarities of Heart-Sounds in Region of Sternum. G. Blumer, New Haven, Conn.

20. **Disposal of Sewage and Spread of Pellagra.**—The authors found that pellagra morbidity was higher in congested communities using surface privies than in more sparsely settled districts in which similar methods for the disposal of excreta were employed. In the city of Spartanburg the endemic foci of pellagra were located in the districts in which surface privies were in use. In cotton-mill villages equipped with surface privies pellagra was found to be endemic and new cases of the disease arose there year after year. In two cotton-mill villages completely equipped with water-carriage systems of sewage disposal it was impossible to find cases of pellagra which had certainly originated there, although some cases which had originated elsewhere were present. There is some evidence that pellagra spreads in hospitals for the insane more readily in the wards housing untidy patients. This study indicates that methods of disposal of human wastes may prove to be a determining factor in the spread of pellagra in certain communities and it suggests a possible method of prophylaxis, which is now being tested in a practical way.

21. **Normal Presystolic Sound.**—A presystolic sound, which is generally below the limits of human audibility, was shown on the phonographic tracings of a number of normal boys studied by Bridgman. It occurs 0.02 second after the beginning of the auricular wave of the apex cardiogram, 0.07 second before the beginning of the first sound; is of a duration of 0.04 second. A possible etiologic factor is suggested, the tension of the ventricular walls, and a possible relationship between this sound and the presystolic gallop is called to mind.

23. **Latent Hypertrophy of Heart in Nephritis in Children.**—Of eight cases of mild nephritis following scarlet fever five showed albumin in the urine usually in traces, not constantly, and with the occasional appearance of hyaline casts. In three of them, on a single examination, albumin was not found. The physical signs pointing to cardiac hypertrophy were the classical ones. They were in evidence in each case and especially significant was the clear, and at times ringing aortic second sound, which usually exceeded in intensity the pulmonic sound.

In all the cases in this group the orthodiagraphic examination disclosed a more or less marked hypertrophy of the left ventricle. The aorta was frequently dilated and showed an unusually marked pulsation. There was evidence in two of the patients of a muscular insufficiency of the left ventricle. Of six cases of chronic and subacute hemorrhagic nephritis in children, the etiology in three was scarlet fever; it was undetermined in the others. With one exception, these patients had an acute hemorrhagic nephritis with edema, a relatively short time previously, signs of which continued with abated severity to the present. The urines of all of them contain large amounts of albumin, hyaline and granular casts and red blood cells. Of cardiac symptoms, these patients had few, only two of them complaining of dyspnea on exertion. The physical signs were uniformly those of hypertrophy of the left ventricle without dilatation, findings which were convincingly shown by orthodiagraphic tracings. In two cases of acute glomerular nephritis an exquisite left ventricular hypertrophy had developed with the usual clinical signs and fluoroscopic appearance.

26. **Phenolsulphonephthalein Excretion in Urine and Non-Protein Nitrogen Content of Blood.**—The authors found that many cases of chronic nephritis show normal phenolsulphonephthalein excretion and normal non-protein nitrogen content in the blood. The content of non-protein nitrogen in the blood varies in a rough way inversely with the excretion of phenolsulphonephthalein in the urine in nephritis. The phenolsulphonephthalein excretion is influenced by cardiac decompensation and other unknown factors so that quite unexpected results occur in individual cases. The content of non-protein nitrogen in the blood seems to be less influenced by cardiac and other complicating factors. The amount of non-protein nitrogen in the blood seems to be of considerable prognostic value. The height of the blood-pressure and the pulse-pressure do not seem to be of prognostic importance in nephritis.

27. **Abderhalden Reaction.**—Ross and Singer summarize their work as follows: 1. Using the Abderhalden technic with the Abderhalden reaction, the serums of normal animals frequently show evidence of the presence of ferments capable of digesting various tissues of the body. 2. The material causing the positive Abderhalden reactions between normal serum and normal tissue may be precipitated from the washings by the addition of an equal volume of alcohol. 3. The

material causing the positive Abderhalden reactions between normal serum and normal tissue may be completely removed from the substrate if the washing is continued long enough. The number of washings required varies with different individuals and different tissues. 4. The only method which will show whether this material is completely extracted from the substrate is to make a number of Abderhalden tests using a number of normal serums. Until this has been done the substrate cannot be considered fit for use with pathologic serums.

29. **Botulism Due to Eating Canned Beans.**—The twelve cases reported by Wilbur and Ophüls presented the typical clinical picture of botulism apparently due to eating of domestically prepared canned string beans served without preliminary heating. That string beans may act as a culture medium for the *Bacillus botulinus* is possible, and the possibility is being further investigated. The methods of sterilization under pressure in use by canning factories seems to preclude the possibility of the growth of *Bacillus botulinus* in their pack.

Vascular thromboses were found about the brain-stem in a patient dying with the symptoms of botulism. Such lesions explain better the clinical phenomena observed than does the more or less hypothetical assumption of a specific action of the botulin on certain ganglion cells.

30. **Normal Peculiarities of Heart-Sounds in Region of Sternum.**—The peculiar quality of the heart-sound underneath the sternum and in its neighborhood is emphasized by Blumer. The sound occurs at all ages after infancy. After the age of 2 years Blumer has seldom failed to find it. The quality of the sound is described as a superficial scratching sound. In a few instances it has a clicking or tapping quality. The scratching quality is present with both systole and diastole. Usually it is of brief duration and of equal intensity with both sounds. Occasionally the systolic scratch is the more intense; rather more frequently the diastolic. The sound appears to be decidedly superficial, does not resemble an endocardial murmur, but does strongly suggest a friction rub. It is uninfluenced by respiration, and in many instances change of position has little or no effect on its intensity. In about 50 per cent. of the cases it is somewhat intensified by the leaning forward position or by the right or left lateral position. In the left lateral position the maximum area of the sound sometimes shifts 1 or 2 cm. to the left.

The sound is usually heard best at the lower end of the sternum opposite the fifth and sixth costal cartilages, a little to the left of the median line. In the average adult the area over which the scratching quality is readily appreciable measures about 13 by 9 cm.; in children, about 7 by 8 cm. In hearts which are hypertrophied or dilated from disease the area is usually distinctly enlarged, averaging about 15 by 12 cm. In a vertical direction there is a good deal of variation in the situation of the area of scratching. It is practically always prominent just above the ensiform cartilage, and occasionally can be heard below the ensiform. It only occasionally passes upward above the angle of Louis. While Blumer does not believe that the sound will ever be a frequent source of error, he is confident that it will be an occasional one. For this reason he thinks it important that it should be recognized as a physiologic phenomenon.

Arkansas State Medical Society Journal, Little Rock

October, XI, No. 5, pp. 113-132

31 Surgical Treatment of Glaucoma. H. Moulton, Fort Smith.
32 Prevention of Peritonitis in Belated Cases of Intra-Abdominal Infections with Especial Reference to Iodin. J. A. Crisler and E. J. Johnson, Memphis, Tenn.
33 Underestimation of Internal Medicine by Some Who Do Surgery. C. S. Pettus, Little Rock.
34 Infections of Gall-Bladder. W. A. Snodgrass, Little Rock.

Boston Medical and Surgical Journal

October 22, CLXXI, No. 17, pp. 621-658

35 *Vaccine Therapy in Eye Diseases of Bacterial Origin. L. S. Medalia, Boston.
36 Study of Two Hundred and Twenty-Six Cases of Enuresis. A. B. Schwartz, Chicago.
37 Tobias Smollett: Physician and Novelist. R. M. Green, Boston.

35. **Vaccine Therapy in Eye Diseases of Bacterial Origin.**—The use of vaccine in bacterial infections of the eye, Medalia says, if judiciously carried out, will yield results as could not be obtained with any other method of treatment heretofore known. Autogenous vaccine should be used as soon as possible. In order to obtain good results optically as well, the vaccine treatment should be employed before permanent damage to the eye occurs. When used in infections of the anterior chamber, especially in hypopyon ulcers, repeated paracentesis, if performed, alongside of the vaccine treatment, will yield better results than when vaccine is used alone. Small and oft-repeated doses will do away with marked negative phases and minimize the chance of a possible set back, both of which might occur if too big a dose is employed. Vaccine if used in a prophylactic way is of value in connection with preoperative immunization. It is of special value in cataract operations in which the conjunctiva contains bacteria that cannot be gotten rid of in the ordinary way. The bacteriologic examination in connection with prophylactic immunization of all cases prior to cataract operations seems to be the logical method of procedure and will do away, to a great extent, with running the risk of postoperative infections.

Bulletin of Medical and Chirurgical Faculty of Maryland, Baltimore

October, VII, No. 4, pp. 45-61

38 *Antitoxin Given Intravenously in Laryngeal Diphtheria. S. Nicholson, Jr., Baltimore.

38. **Antitoxin Given Intravenously in Laryngeal Diphtheria.**—Eight cases are reported by Nicholson. Iridoplatinum needles were used exclusively. A small piece of rubber tubing was fitted to the needle and together they were boiled. The end of the syringe that contained the antotoxin was dipped in tincture of iodin, dried on a piece of sterile gauze and the rubber plug removed. The needle was then connected. The place selected for injection was the median basilic vein, and there usually was no difficulty in administering the serum. In some instances, however, particularly in small infants, occasionally incisions had to be made to expose the vein. At the beginning of this work large doses of antitoxin were administered, as high as 20,000 units at a single dose. Later, 5,000 units was the dose employed and occasionally 10,000 to the very bad cases with results just as encouraging as in cases in which larger doses had been employed. It was Nicholson's custom to use routinely atropin in appropriate doses at proper intervals until the dyspnea disappeared. In very small children as a safeguard against auto-extubation and to prevent reintubation when extubation was resorted to, Dover's powders in dose from 1 to 3 grains gave satisfactory results.

The result of the treatment was: First, reduction of mortality from 10⅝ per cent. to 5 per cent. in all cases of diphtheria, not excluding the deaths that occurred within twenty-four hours. In 1912 the death rate was 10⅝ per cent.; antitoxin was then given intramuscularly and hypodermatically. In 1913 the death rate was 5 per cent. plus, including deaths that occurred within a few hours after admission. Total number of cases treated in 1912, 75; 1913, 100. Second, period of convalescence more rapid and vigorous than those cases in which antitoxin was administered in the muscle or under the skin. Third, intravenous antitoxin does not prevent the necessity of intubation unless administered in the early stage of the disease. Fourth, small amounts of antitoxin necessary (see under technic). Fifth, patients who have received antitoxin previously should not be injected intravenously. Sixth, the harassing and perplexing feature of extubation is reduced if the intubation is carefully done and without injury to the larynx.

California State Journal of Medicine, San Francisco

October, XII, No. 10, pp. 397-436

39 Duodenal Feeding—Practical Demonstration. H. G. Watson, Los Angeles.
40 Roentgen Diagnosis of Gastroduodenal Ulcers. W. W. Boardman, San Francisco.

41 Medical Management of Duodenal Ulcer. L. G. Visscher, Los Angeles.
42 Gastroduodenal Ulcer: Symptomatology and Diagnosis. E. Schmoll, San Francisco.
43 Three Cases with Relaxed Pelvic Supports. R. Brown, Santa Barbara.
44 Novocain Poisoning. R. B. Giffen and F. F. Gundrum, Sacramento.
45 Function of General Practitioner in Relation to Study and Prevention of Nervous and Mental Disease. H. W. Wright, Santa Barbara.
46 Induction of Anesthesia and Ethyl Chlorid. C. Dederer, Los Angeles.
47 Case of Hair-Ball Tumor of Stomach. A. Berg, San Francisco.
48 Intranasal Operation for Dacryostenosis. L. D. Green, San Francisco.
49 Shockless Surgery. A. B. Cooke, Los Angeles.
50 Nursing Situation Since Passage of Law. G. S. Courtright, San Francisco.

Cleveland Medical Journal

September, XIII, No. 9, pp. 595-676

51 Hereditary Basis of Eugenics. A. R. Timme, Cleveland.
52 Juvenile Paresis. Report of Case. W. B. Laffer, Cleveland.
53 Conservation of Hearing. J. G. Wishard, Wooster.
54 Wassermann Reaction. Report of Cases. J. M. Danforth, Cleveland.
55 Consideration of Morton's Neuralgia or Metatarsalgia. J. B. Tyrrell, Chicago.

Indiana State Medical Association Journal, Fort Wayne

October, VII, No. 10, pp. 461-506

56 Conservation of Health. V. C. Vaughan, Ann Arbor, Mich.
57 Family Doctor. E. G. Regennas, Hope.
58 Federal Control and Prevention of Tuberculosis. W. Moore, New Albany.
59 Protest Against Commercialism in Medicine. E. P. Easley, New Albany.

Journal of Biological Chemistry, Baltimore

October, XIX, No. 2, pp. 141-304

60 Mode of Action of Urease and of Enzymes in General. D. D. Van Slyke and G. E. Cullen, New York.
61 Effect of Hydrogen Ion Concentration and of Inhibiting Substances on Urease. D. D. Van Slyke and G. Zacharias, New York.
62 Permanent Preparation of Urease and Its Use in Determination of Urea. D. D. Van Slyke and G. E. Cullen, New York.
63 Metabolic Changes in Muscular Tissue. S. A. Matthews and C. F. Nelson, Lawrence, Kan.
64 Soluble Polysaccharides of Lower Fungi. A. W. Dox and R. E. Neidig.
65 Basal Metabolism and Creatinin Elimination. W. W. Palmer, J. H. Means and J. L. Gamble, Boston.
66 Isolation of Substance in Butter Fat Which Exerts Stimulating Influence on Growth. E. V. McCollum and M. Davis, Madison, Wis.
67 Determination of Iodin in Connection with Studies in Thyroid Activity. E. C. Kendall, Rochester, Minn.
68 Formation of Hexone and Purin Bases in Autolysis of Glomerella. H. S. Reed, Blacksburg, Va.
69 *Physiology of Reproduction in Domestic Fowl. R. Pearl and F. M. Surface.
70 Purin Enzymes of Opossum (Didelphis Virginiana). G. T. Caldwell and H. G. Wells, Chicago.
71 Determination of Sugar in Blood. P. A. Shaffer, St. Louis.
72 Normal Level of Blood-Sugar of Dog. P. A. Shaffer, St. Louis.
73 Parahydroxyphenylethylamine, Pressor Compound in an American Mistletoe. A. C. Crawford and W. K. Watanabe, San Francisco.

69. **Physiology of Reproduction in Domestic Fowl.**—It is shown by Pearl and Surface that the dessicated fat-free substance of the corpus luteum of the cow, when injected in suspension, in proper dosage, into an actively laying fowl immediately inhibits ovulation. The duration of this effect varies with different birds from a few days up to two to three weeks. After the bird begins ovulating again the laying goes on unimpaired. The same effect is produced by the injection of extracts of the lutear substance, either intravenously or intra-abdominally. The active substance in producing the inhibition is inactivated by boiling. Further investigation of the subject is in progress.

Journal of Cutaneous Diseases, New York

October, XXXII, No. 10, pp. 683-750

74 *Colloid Degeneration of Skin. Report of Case of So-Called Colloid Milium. M. B. Hartzell, Philadelphia.
75 *Use of Calcium Lactate in Treatment of Certain Dermatoses. C. J. White, Boston.
76 *Skin Diseases in American Negro. H. H. Hazen, Washington, D. C.
77 Case of Ringworm of Scalp in an Adult. J. J. Rothwell, New York.

74. Abstracted in THE JOURNAL, June 20, p. 1988.

75. Abstracted in THE JOURNAL, June 13, p. 1921.

76. **Skin Diseases in American Negro.**—Hazen claims that mulattoes suffer more severely from skin diseases than do full-blooded negroes. The following diseases are more prevalent among negroes than among whites; dermatitis papillaris capillitii, keloids, dry seborrhea, syphilis, tinea tonsurans, urticaria and vitiligo. The following diseases are less prevalent among negroes; alopecia areata, cancer, dermatitis actinica, acute eczema, erythema multiforme, furuncles and boils, angiomata and nevi, pediculosis capitis, psoriasis, rosacea, sycosis vulgaris, tinea cruric and xanthelasma.

Journal of Nervous and Mental Disease, Lancaster, Pa.

October, XLI, No. 10, pp. 617-680

78 Association of Various Hyperkinetic Symptoms with Partial Lesions of Optic Thalamus. E. E. Southard, Boston.
79 *Case of Adult Type of Poliomyelitis and Case of Acute Ascending Paralysis of Type of Landry. H. C. Gordinier, Troy, N. Y.
80 Contusion of Brain. J. H. W. Rhein, Philadelphia.

79. Published in the September issue of the *Albany Medical Annals*, and abstracted in THE JOURNAL, October 3, p. 1230.

Journal-Lancet, Minneapolis

October 15, XXXIV, No. 20, pp. 525-550

81 Diagnosis and Treatment of Infection of Urinary Tract. F. Ewing, Kenmare, N. Dak.
82 Nasal and Pharyngeal Conditions Affecting Voice. J. G. Parsons, Sioux Falls, S. Dak.
83 Suggestions on Use of Reference Library in Preparation of Medical Papers. M. H. Mellish, Rochester.
84 Public Health Legislative Campaign. H. W. Hill, St. Paul.

Kentucky Medical Journal, Bowling Green

October 1, XII, No. 19, pp. 579-614

85 Brotherhood of Doctors. W. A. Poole, Henderson.
86 *Tumor Formation in Plant and Animal Life: Its Relation to Frequency of Cancer in Man. A. D. Wilmoth, Louisville.
87 Anatomy and Pathology of Acute Intestinal Obstruction. G. A. Hendon, Louisville.
88 Intestinal Obstruction. G. A. Hendon, Louisville.
89 Management of Labor in Country Practice. G. G. Thornton, Lebanon.
90 Ecbolic Action of Pituitrin. J. L. Atkinson, Campbellsville.
91 Case of Gunshot Wound of Bladder. T. F. Miller, Cave City.
92 *Severe Case of Purpura Hemorrhagica Treated with Subcutaneous Injections of Pure Blood. C. C. Howard, Glasgow.
93 Eye-Strain. J. H. Thorpe, Owensboro.
94 Surgical Treatment of Diseases of Thyroid. J. R. Wathen, Louisville.

October 15, No. 20, pp. 615-650

95 Conservative Surgery of Ovary. C. W. Hibbitt, Louisville.
96 Chronic Prostatitis Following Urethral Neisserian Infection. C. G. Hoffman, Louisville.
97 Osteomyelitis. C. W. Karraker, Louisville.
98 Selection of Anesthetic. E. F. Horine, Louisville.
99 Epistaxis. W. D. Levi, Louisville.
100 Case of Diphtheria with Recurrence and Fatal Termination. V. E. Simpson, Louisville.
101 Case for Diagnosis. J. B. Lukins, Louisville.
102 Some Interesting Appendices. C. B. Spalding, Louisville.

86. Abstracted in THE JOURNAL, October 25, p. 1502.

92. **Purpura Hemorrhagica Treated with Injections of Pure Blood.**—Howard's patient had been bleeding slowly for three weeks. Every force of treatment employed had failed. Subcutaneous injection of pure blood from healthy persons was suggested to the patient, and the suggestion was adopted. A healthy young man was selected whose arm veins were very prominent, 28 c.c. of blood were drawn from the vein and immediately injected into the subcutaneous tissue of the hip (used two 10 c.c. Luer syringes). The hemorrhage had almost ceased within twenty-four hours. On the second day 55 c.c. were injected, taking the blood from two young men. Within twenty-four more hours the hemorrhage had entirely ceased. The fourth days 80 c.c. were injected, again using two donors. The sixth day 90 c.c. were injected, using two donors. The patient was markedly improved by this time. His pulse was 80 with temperature normal. Hemorrhage would now occasionally stain the septum. Small doses of iodids were given at this time to aid absorption. Three months have elapsed since

this treatment was instituted. The patient has improved to the degree that he is now able to be out most of his time. He has gained 30 pounds in weight, but has not yet resumed his regular duties.

Laryngoscope, St. Louis

September, XXIV, No. 9, pp. 773-836

103 Oral Complications of Exanthemata. C. R. C. Borden, Boston.
104 Etiology, Diagnosis and Treatment of Aural Complications of Exanthemata. S. A. Friedberg, Chicago.
105 Two Cases of Loss of Caloric Vestibular Reaction, with Operative Findings. E. B. Dench, New York.
106 Teratoma of Pharynx. C. C. Eves, Philadelphia.
107 Orbital Abscess with Optic Neuritis Due to Acute Ethmoiditis in Child. Operation. J. H. Guntzer, New York.
108 Use of Vaccines in Treatment of Chronic Diphtheria Carriers. A. I. Weil, New Orleans.
109 Apparatus for Giving an Approximately Accurate Quantitative Hearing Test. J. W. Downey, Jr., Baltimore.
110 New Tonsillectome. H. B. Searcy, Tuscaloosa, Ala.

Medical Record, New York

October 24, LXXXVI, No. 17, pp. 769-740

111 Relation of Diet to Cancer. L. D. Bulkley, New York.
112 Amputations. A. M. Fauntleroy, U. S. Navy.
113 Neurologic and Psychiatric Aspects of Railway Accident Cases. Some Medicolegal Problems. A. Gordon, Philadelphia.
114 Modern Treatment of Syphilis. W. H. Watters, Boston.
115 Acute Leukemia. A. Strauch, Chicago.
116 Umbilical Infections. R. L. Vioran, Chicago.
117 Occlusion of Inferior Mesenteric Artery. E. D. Friedman, New York.
118 Case of Giant-Cell Sarcoma Successfully Treated by Combination of Surgery and Roentgen Rays. E. Birdsall, Glens Falls.

New York Medical Journal

October 24, C, No. 17, pp. 797-848

119 *Muscle Bound Feet. R. A. Hibbs, New York.
120 Eventration of Diaphragm. M. Manges and H. Wessler, New York.
121 Tuberculosis of Conjunctiva. W. T. Shoemaker, Philadelphia.
122 Neoplasms of Bladder. F. R. Hagner, Washington, D. C.
123 End-Results of Criminal Abortion. M. Rabinovitz, New York.
124 New Bed Bathtub. E. A. Gallegher, New York.
125 Implantation of Generative Glands and Its Therapeutic Possibilities. G. F. Lydston, Chicago. (To be continued.)
126 Curette for Endotympanum. E. L. Meierhof, New York.
127 Syphilis in Colored Canal Laborers. W. G. Baetz, Canal Zone.
128 Horse Asthma. J. G. Missildine, Parsons, Kan.

119. **Muscle Bound Feet.**—Limitation to dorsal flexion, Hibbs states, is a common cause of muscle bound feet. The removal of the limit to dorsal flexion must be accomplished by some method which at the same time inhibits the function of the calf, after walking is resumed, long enough to allow the opposing anterior leg muscles to develop. Otherwise muscle balance will not be restored and no permanent good will be accomplished. Lengthening the tendo Achillis fulfills these conditions perfectly. It removes at once the limit to dorsal flexion and at the same time inhibits the function of the calf for from two to three months in children and four to six months in adults, giving abundant time for the proper development of the opposing muscles and the intrinsic muscles of the foot, and for the complete restoration of normal muscle balance.

In operating on the tendo Achillis, Hibbs sees to it that the continuity of the tendon is unbroken, its lengthening accurate, and its sheath preserved, so that there is absolutely no danger of any impairment of the strength of the tendon or the function of the muscle. Thirty-eight patients have been entirely relieved from the symptoms of which they complained and have had restored to them the capacity to walk normally and do so with pleasure and great benefit to their general health, and none of them have required further treatment of any kind.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

October, XIX, No. 4, pp. 121-162

129 Laparotomies of Four Years at Abingdon Hospital. A. M. Willis, Richmond.
130 *Back Ache—Its Cause and Its Treatment. W. T. Graham, Richmond.
131 Sporotrichosis (?). E. P. McGavock, Richmond.
132 Cholesteatomatous Involvement of Mastoid. R. H. Wright, Richmond.
133 Typhoid, Hemorrhagic. R. S. Preston, Richmond.

130. **Back Ache—Its Causes and Its Treatment.**—Back ache due to flat foot, Graham says, usually disappears promptly when the inner sides of the heels of the boots are elevated ¼ of an inch and the inner corners of the heels set ½ inch farther forward than the outer corners. If this does not afford the desired relief the arches may be supported by felt pads or steel supporters. Of the two forms of support mentioned, Graham much prefers the felt instep pads to the rigid steel supports. The most common surgical cause of continued back ache met with in children and occasionally encountered in adults, he says, is spinal caries or tuberculosis of the spine. When acute, as evidenced by marked muscular spasm of the back and exquisite pain, the patient should be placed on a Bradford frame with a bag of sawdust underneath the spine so as to produce a posture of hyperextension. When the acute stage has sufficiently subsided a plaster corset is applied extending from the sternal notch above to a point just sufficient to allow the patient to sit down. During the latter stage of convalescence a steel brace may be worn. When ankylosis is well established and all pain has disappeared all support may be gradually omitted.

Sacro-iliac strain is relieved in the milder cases by adhesive strips which should be placed diagonally across the lumbar region. Starting at a point just below the anterior superior spine, the strip of adhesive is carried diagonally across the back. Then one is started on the opposite side and carried across in a similar manner. The successive strips overlap each other from ⅓ to ½ of the width of the strip. Then circular bands encase the pelvis. For the chronic types of sacro-iliac strain a leather belt around the pelvis often affords perfect relief. This belt is worn tight around the pelvis in order to prevent movement in the sacro-iliac joint. In the more serious types fixation by plaster or a steel splint are indicated. For spondylitis deformans, a condition in which bony deposits are thrown out around the articular surfaces of the vertebra and on the spinous and transverse processes, producing a painful and deforming condition, a long plaster corset extending from the pelvis to the suprasternal notch offers the best hope of relief.

Lumbago is best treated by the criscross adhesive strapping as described for sacro-iliac strain, except that it is not necessary in this condition to encircle the pelvis. Visceroptosis causes much back ache which can be relieved by a corset which fits snugly around the pelvis and supports the abdominal viscera and strengthens the abdominal wall. The corset should begin to be less snug as it leaves the brim of the pelvis, and should gradually become more open from that point upward. In exceptional cases an abdominal pad or an abdominal supporter, to be worn inside the corset, is indicated. Static back, a condition indicated by weak, flabby muscles and accompanied by faulty weight bearing and pain, calls for massage, exercises and a properly adjusted corset. Scorbutic spine is best treated by recumbency on a Bradford frame, with the spine hyperextended, proper attention being given to diet and hygiene.

Philippine Journal of Science, Manila

June, IX, No. 3, pp. 199-305

134 Some Data Concerning Medical Geography of Philippines. F. Calderon, Manila.
135 Etiology of Trichomycosis Palmellina in Philippine Islands. O. Schöbl, Manila.
136 *Bacteriology of Leprosy. J. A. Johnston, Manila.
137 Intestinal Helminthiasis in Philippine Islands as Indicated by Examinations of Prisoners on Admission to Bilibid Prison, Manila. D. G. Willets, Manila.
138 Bacillary Dysentery: Most Prevalent Form in Manila and Its Treatment. W. E. Musgrave and A. G. Sison, Manila.
139 Widal Reactions Among Healthy Adult Filipinos. D. G. Willets, Manila.
140 Experiments on Cultivation of Rinderpest Virus as Described by Baldrey. W. H. Boynton, Manila.
141 Kidney-Worm Infestation of Swine in Philippine Islands, with Special Reference to Pathologic Changes. W. H. Boynton, Manila.
142 Another Dangerous Jellyfish in Philippine Islands. S. F. Light, Manila.
143 Some Simple Laboratory Apparatus: Thermoesthesiometer: Venous-Pressure Apparatus: Simple Timing System. R. B. Gibson, Manila.

136. **Bacteriology of Leprosy.**—From the spleens of two lepers who died Johnston succeeded in cultivating an absolutely non-acid-fast streptothrix. These two strains are apparently identical, and now grow readily on the ordinary glycerin agar, but the original isolations were slow in growth. They were made on placental agar and fish-juice agar, and required from three to four weeks for growth to become apparent. The growth of this organism is described as spreading, with a tendency toward the formation of small islets with an elevated center. These eventually coalesce and the surface growth is dull and more or less rugose. It is pearly white in young cultures, becoming brown in cultures more than four months old.

Several forty-eight hour cultures of this streptothrix were rubbed up in a mortar and a number of guinea-pigs and rabbits were inoculated with this suspension. The rabbits were all inoculated with 1 cubic centimeter intravenously; the guinea-pigs with 0.5 cubic centimeter subcutaneously in each groin. Of this series, one animal died while three animals are still alive; the others, numbering sixteen, were killed at varying periods from a week up to six months. No lesions were discovered post mortem in the series of animals killed. One guinea-pig dying, however, showed a slightly enlarged liver with a few scattered nodules on the undersurface. There was no glandular enlargement. Smears from the cut surface of several of the nodules showed no organisms, but many small rounded masses from 3 to 6 microns in greatest diameter were visible; these were distinctly fast. Johnston had noted similar masses in the juice expressed from a leproma, in scrapings from a nasal ulcer in a leper, and also in old cultures of the streptothrix. Some of these bodies had frayed-out edges, and resembled blood-plates as they sometimes see them. Nine days after, cultures made from these nodules showed in two tubes of placental agar a slight whitish growth of about the consistency of cream cheese. It was spreading, did not grow in the water of condensation, and at the end of four weeks covered the surface of the slant. Stained preparations from these cultures showed long and short rods which were distinctly acid fast.

In April a second series of animals was inoculated as before. One of the guinea-pigs developed a pussy discharge from its left eye eight days after inoculation. Stained smears showed enormous quantities of acid-fast bacilli. Cultures from this guinea-pig were all negative at the end of two months. This animal died some nine months later, and the liver, lungs, spleen and some of the lymph glands showed marked nodular involvement. Smears from the different organs showed a few acid-fast bacilli. Cultures made from the spleen on placental agar showed after two weeks a growth practically identical with the first isolation. Efforts to identify the organisms isolated by means of agglutination and deviation of complement tests have been so far unsatisfactory.

Public Health Journal, Toronto

October, V, No. 10, pp. 611-656

144 Public Health and General Practitioner. T. H. Whitelaw, Edmonton, Alberta.
145 Use of Rebipelagar in Water and Milk Examination. J. Race, Ottawa.
146 Standards with Reference to Sewage Treatment. T. A. Murray.
147 Some Difficulties of Medical Officers of Health in Towns and Rural Communities. T. W. Vardon, Galt.
148 Conservation of Child Life. J. J. Kelso, Ontario.

Texas State Journal of Medicine, Fort Worth

October, X, No. 6, pp. 215-254

149 Sarcoma. W. A. Bryan, Nashville, Tenn.
150 Carcinoma of Stomach: Early Diagnosis. R. W. Knox, Houston.
151 Method of Choice in Prostatectomy. F. C. Walsh, San Antonio.
152 Some Laboratory Methods Which Deserve Wider Usage. M. A. Wood, Houston.
153 Significance of Acid-Fast Bacilli in Urine. J. E. Robinson, Temple.
154 Microscopy of Urinary Sediment in Life-Insurance Examinations. W. F. Thomson, Beaumont.
155 Examination of Urine in Life-Insurance Examinations. W. Harrall, Dallas.
156 Eye Symptoms in Brain Tumor. H. T. Aynesworth, Waco.
157 Gunshot Wound of Cavernous Plexus. Report of Case. E. H. Cary, Dallas.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Tuberculosis, London

October, VIII, No. 4, pp. 195-244

1 *Milk-Supply as Causal Factor in Tuberculosis. S. Delépine.
2 *Surgical Tuberculosis in Childhood. R. L. Knaggs.
3 *Arneth Count in Pulmonary Tuberculosis. W. E. Cooke.
4 *"Albumin Reaction" of Sputum in Pulmonary Tuberculosis. E. G. Glover.
5 Tuberculosis Conference at Leeds. H. D. Woodcock.

1. **Milk-Supply and Tuberculosis.**—Delépine's investigations indicate that cow's milk plays a very important part in the production of infantile tuberculosis in England and Scotland.

2. **Surgical Tuberculosis in Childhood.**—Rest in the treatment of joint tuberculosis according to Knaggs if properly made use of, will, in a large proportion of cases, make recourse to surgery unnecessary, although he admits that only in a hospital can these patients get the rest and extension treatment which is so essential to their recovery.

3. **Arneth Count in Pulmonary Tuberculosis.**—A blood-film showing an increase of large mononuclears, perhaps a slight increase in lymphocytes, and a dislocation of the "Arneth" to the left, Cooke agrees with others is strong evidence of the existence of an active tuberculous focus. The Arneth count also tells whether any absorption of toxins is taking place, and therefore whether the lesion is active or quiescent. A left-handed dislocation always indicates toxemia. As an aid to prognosis the Arneth count is valuable. A patient with few physical signs presenting a marked dislocation of the count to the left, which does not improve under treatment, must be looked on as in grave condition. There is probably a larger amount of mischief than is indicated by the physical signs. If the count tends to assume a more right-handed appearance, the prognosis becomes more hopeful, according to the amount of that improvement.

Lastly, the Arneth count is a guide to treatment. In treatment by tuberculin the count affords evidence as to whether the focal reactions are taxing the patient's capacity of dealing with the toxins resulting from them. If tuberculin be pushed too far, there appears an increase in the cells of classes 1 and 2. If the Arneth count is stationary, the dose has for the time being reached its therapeutic maximum. In treatment by "contratoxin" the count is also useful. The bacteriolysis and phagocytosis generated by "contratoxin" produce an auto-inoculation. This causes a further deviation of the count to the left; an indication, therefore, temporarily to reduce the dose, or discontinue its administration for a short time. When this is done the count soon assumes its previous appearance and continues to move to the right. Further injections are indicated until the count becomes normal.

4. **"Albumin Reaction" of Sputum.**—Two hundred and ten quantitative examinations of the sputum were made by Glover in 149 cases, and he found that the sputum of phthisis patients contains, on the average, a larger amount of albumin than that of the non-tuberculous, but that the amount present in tuberculosis cases is often less than that usually found in the non-tuberculous. Injury to the epithelial surface of any part of the respiratory or buccal tract may give to the presence of albumin in the sputum. Glover points out that a sputum test, the delicacy of which may be imparied by the vigorous brushing of teeth prior to expectoration does not give promise of conclusive results or material assistance in the diagnosis of doubtful cases of pulmonary tuberculosis.

British Medical Journal, London

October 10, II, No. 2806, pp. 609-652

6 *Tetanus; Its Prevention and Treatment by Use of Antitetanic Serum. A. MacConkey.
7 Insects and War; Flour Moth in Soldiers' Biscuits. A. E. Shipley.
8 Treatment of Syphilis. J. E. R. McDonagh.
9 Need of Method in Treatment of Lupus. N. Walker.
10 *Antimony in Syphilis. J. C. McWalter.
11 Modus Operandi of Wassermann Reaction. J. E. R. McDonagh.

12 Four Cases of Lahore Sore. J. G. Tomkinson.
13 Infantile Eczema. H. Davis.
14 Keratodermia Blennorrhagica. A. W. Williams.

6. **Tetanus; Prevention and Treatment by Use of Antitetanic Serum.**—MacConkey summarizes his paper as follows: Tetanus may be cured by the administration of antitoxin, provided that the serum treatment is begun early in the attack and is pursued vigorously and continuously. Unfortunately in the present state of our knowledge a diagnosis is, as a rule, made only when the disease is in a stage so advanced as to make the results of treatment uncertain, even though large doses of antitoxin are used. These large doses are costly, and place the serum treatment of tetanus practically out of the reach of those with shallow purses—unless, of course, the serum be provided by the state. But in the prophylactic use of serum there is within the reach of every one a means of checking the disease. It has been proved beyond the shadow of a doubt that, wherever the prophylactic use of antitoxin has been carried out systematically, tetanus may be said to have disappeared. Tetanus should therefore be looked on as a preventable disease.

10. **Antimony in Syphilis.**—While the curative effects of antimony on syphilitic lesions are much like those of arsenic, McWalter says, it is distinctly milder in character, and is seldom or never, followed by optic neuritis or by the fatal effects attributed to arsenic compounds. He does not think that antimony will cure syphilis if given alone, but it certainly assists the cure if mercury be also given. It appears to be particularly useful in the dermatologic manifestations of the disease, and the cases which McWalter treated with it were notably free from nervous complications. The red sulphid—or antimonium sulphuratum—is the most convenient salt to employ. The dose should not exceed from 1 to 2 grains, but must be continued daily for two or three months—with occasional intermission of a few days. McWalter thinks it is a useful drug in the fatal bronchopneumonia which carries off so many infants the subjects of inherited syphilis.

Edinburgh Medical Journal

October, XIII, No. 4, pp. 289-360

15 Atypical Male and Female Sex Ensemble (So-Called Hermaphroditism and Pseudohermaphroditism). D. B. Hart.
16 Primary Hypertrophy of Gums and Reduplication of Lip. D. M. Greig.
17 Passing of Vesalius. (To be continued.) G. M. Cullen.

Glasgow Medical Journal

October, LXXXII, No. 4, pp. 241-319

18 *Use of Neosalvarsan in Mental Deficiency. L. Findlay.
19 Points in Abdominal Surgery. (To be continued.) T. K. Dalziel.
20 New Medical Electric Department of Glasgow Royal Infirmary. J. MacIntyre.

18. **Neosalvarsan in Mental Deficiency.**—On the basis that syphilis is a frequent cause of idiocy, Findlay introduced neosalvarsan intravenously or intramuscularly in four cases and found a marked effect in improving the mental condition of the patients. Each of the cases was a marked example of mental deficiency, three of them being frankly idiots. The treatment in all had a most salutary effect, and although it did not bring them up to a normal level, it made it possible for two of them to be educated, and to look after themselves. Findlay suggests that in milder cases, and especially if the treatment were commenced earlier, it might be possible to obtain complete cures.

Indian Medical Gazette, Calcutta

September, XLIX, No. 9, pp. 337-376

21 Water-Supplies of Troops in India. P. Hehir.
22 Treatment of Malignant New Growths, Dr. De Keating-Hart's Method of Fulguration and Thermoradiotherapy. E. A. C. Matthews.
23 Anemia Occurring Among Indian Troops Stationed in Singapore—1912-1913. V. N. Whitamore.
24 Clear Pupil after Cataract Extraction. V. B. Nesfield.
25 Devil Driving. Panchoa Devils—Classed as "Silent" and "Crying." K. P. Bagchi.
26 Ascaris Lumbricoides Infection in Malabar District. T. K. G. Nair.
27 Ruptured Extra-Uterine Pregnancy Five to Six Months. Laparotomy. C. C. Barry.
28 Surgical Treatment of Goiter in Tibet. G. B. Harland.
29 Anagnostakis' Operation for Trichiasis. S. Clark.
30 Emetin and Young Children. C. Newton-Davis.

Lancet, London

October 10, II, No. 4754, pp. 883-930

31 Pathology of Heart Function. T. Lewis.
32 Making Cultivation Media without Prepared Peptones; Peptone-Free Medium for Growing Tubercle Bacilli. S. R. Douglas.
33 Transport of Wounded in War. E. Kondoleon.
34 Case of Acute Exophthalmic Goiter Simulating Acute Obstruction. G. M. Smith.
35 Improvisation of Apparatus in Treatment of Certain Fractures in Modern Warfare. J. H. Watson.
36 Observations on 31,000 Consecutive Medical Examinations. J. Collie.
37 Wounds of Present Campaign. G. H. Makins.

Quarterly Journal of Medicine, London

October, VIII, No. 29, pp. 1-95

38 *Clinical and Pathologic Study of Heart in Diphtheria. W. E. Hume and S. J. Clegg.
39 *Effects of Anemia on Pathologic Processes Occurring in Acute Ulcer of Stomach. C. Bolton.
40 *Conduction in Auricles. A. E. Naish.
41 Inspiratory Diminution of Pulse (Pulsus Paradoxus). A. W. Falconer and J. M. McQueen.
42 Pathologic Changes in Adrenals. T. R. Elliott.
43 Tonicity of Abdominal Muscles in Enteric Fever. A. Patrick.

38. **Study of Heart in Diphtheria.**—Five hundred and seventy-three cases of diphtheria were under the daily supervision of Clegg and when any irregularity of the heart and pulse was detected, polygraphic records were obtained. Other cases were similarly investigated if the general condition of the patient suggested that the heart would be affected in a later stage of the disease, even though the rhythm of the heart was regular during the early stages. In this way Hume and Clegg obtained polygraphic records of seventy cases, of which thirty were found to be normal. Of the forty cases which presented irregularities, twenty-two showed the characteristics of a sinus arrhythmia and were associated with normal cardiac signs and symptoms.

The remaining eighteen cases presented many different types of heart irregularity and form the subject of this communication. Though the varieties of arrhythmia are great, the cases fall naturally into certain clinical groups. For instance, in Group 1 six cases are described which had many features in common; the patients were very ill from the onset of the disease, the hearts presented gross and varying irregularities of rhythm, and the pathologic picture in four cases was identical. In Group 2 nine cases are included which manifested a less serious clinical condition in the early stages than those in Group 1; although the patients were seriously ill at some period of their rather prolonged stay in the hospital, there was less variety in the types of arrhythmia, and in two fatal cases the pathologic lesions of the heart were slight as compared with the gross changes found in the four instances in Group 1. In Group 3 three mild cases are described in which some cardiac irregularity occurred without any other sign of involvement of the heart. The authors claim that any form of arrhythmia of the heart (except sinus arrhythmia) in diphtheria indicates that the heart muscle or nerves are involved in a pathologic process, however mild the illness may otherwise appear to be, and that special precautions are necessary to keep the patient recumbent.

39. **Effects of Anemia in Acute Ulcer of Stomach.**—The experiments made by Bolton show that when an animal, the subject of an acute gastric ulcer, is placed on a milk diet, so that its stomach empties rapidly, the growth of the epithelium over the base of the ulcer and the filling up of the latter with granulation tissue occurs with precisely the same regularity and at the same rate at all stages in the healing process whether the animal is anemic or normal. When once the slough has separated from the base of the ulcer and healthy granulation tissue commenced to grow, the latter is no more vulnerable to the action of the gastric juice in the anemic than in the normal animal. The same applies to the regenerating epithelium, and, in addition, its activity of growth and power of forming new glands are not in the least interfered with by the anemia.

Anemia, therefore, produced by direct loss of blood, has no influence as an isolated factor in facilitating the production of an acute ulcer; nor in causing such an ulcer to extend laterally or in its depth by increasing the vulnerability of

the tissues concerned; nor in preventing its healing either by interfering with the regenerative power of the surface epithelium or of that of the granulation tissue of the base of the ulcer. When the anemic animal is allowed meat to eat, any delay in the healing is due to the diet of the animal and not to the anemia. These experimental facts agree with the clinical observations made by Bolton.

40. **Conduction in Auricles.**—Tracings are published by Naish from a case of acute heart-block, which receive a ready explanation only on the supposition that the cardiac impulse spreads to the ventricle and to the auricle by different paths, and does not pass to the ventricle through the auricle, as hitherto supposed.

Presse Médicale, Paris

August 12, XXII, No. 62, pp. 597-604

44 *Necessity for Conservative Surgery in the Field. (Conseils aux chirurgiens.) E. Delorme.
45 Emergency Treatment for Wounds of the Eyes. (Traitement d'urgence des plaies de guerre interessant les yeux.) V. Morax.
46 Emergency Immobilization for Fractures. (Le service des brancardiers.) P. Bonnette.
47 Field Hospitals. (Organisation des ambulances de guerre.) P. Bonnette.

August 19, No. 63, pp. 605-608

48 Electric Light in Treatment of Infected Gangrenous or Torpid Wounds. Chaput.
49 Technic for Vaccination against Typhoid. G. Vitoux.

August 26, No. 64, pp. 609-612

50 Instructions for Lay Nurses. (Notions indispensables aux infirmières.) H. Hartmann. Concluded in No. 67.
51 Massage in After-Care of Gunshot Wounds and Fractures. (Le massage méthodique chez les blessés de guerre.) P. Kouindjy.

September 2, No. 65, pp. 613-616

52 Prophylaxis of Contagious Diseases. L. Lagane.

September 9, No. 66, pp. 617-620

53 Immobilization of Fractures from Gunshot Injury. (L'immobilisation des fractures en chirurgie de guerre.) Chaput.

September 16, No. 67, pp. 621-624

54 *Roentgen Apparatus in the Army. (Les rayons X dans l'armée.) P. Desfosses.
55 *Diagnosis of Death in Wartime. (Le diagnostic immédiat de la mort en temps de guerre.) M. D'Halluin.
56 Sanitary Hygiene in Temporary Camp. (Etablissement des feuillées.) P. Desfosses.

September 23, No. 68, pp. 625-628

57 Revaccination is Morally Obligatory. Wurtz.

44. See Paris Letter in THE JOURNAL, October 24, p. 1492.

54. **Roentgen Work in the Field.**—Three different types of portable Roentgen apparatus have been provided for the French army, it is stated. One type has proved its usefulness already in Morocco and in the Balkan campaigns. The Roentgen apparatus are all mounted on autotrucks. Béclère is in charge of the radiologic service for the entire army. He advises outlining at once with tincture of iodin or silver nitrate on the patient's skin the shadows cast by the organs or bodies being examined within. This takes the place of Roentgen pictures in emergencies.

55. **Rapid Diagnosis of Death.**—D'Halluin says that the simplest and most practical test for persisting vitality is instillation of ether into one eye. If there is still life, the eye reddens. The subject should be lying horizontal, in order to favor the circulation in the head, and only one eye should be treated; this leaves the other eye for the control. This test has never failed him, but still he advises not to rely on it too implicitly in case of negative findings.

He does not advocate the blister test, for various reasons, but states that direct puncture down to the heart has proved useful and harmless in his experience. He introduces the needle until it just rests on the myocardium; then if the needle does not move in the slightest it is evident that the heart is not beating. By tapping on the heart with the needle it may be possible to start it to contracting if it is still capable of being aroused. His experiments on dogs gave astounding results in some cases from this mechanical stimulation of the heart action, to supplement artificial respiration, resuscitating many animals apparently long dead. In these experiments he made a small incision in the skin in an interspace through which he introduced a grooved sound or blunt probe, and pushed against the myocardium rhythmically and abruptly, thus starting up the heart to resume its work. The certainty of this cardiopuncture test outbalances in many instances the more or less theoretical dangers that may be advanced against it, he remarks. Icard's subcutaneous fluorescein test is the standard one for the purpose, but the circulation may be so weak that subcutaneous injection may not prove decisive. Consequently D'Halluin advises intravenous injection of 5 c.c. of the usual solution of fluorescein 20 parts, sodium carbonate 30 parts, and distilled water to 100 parts. This test is so sensitive that if the fluid is injected nearer the head it is liable to give misleading results. He warns further that various specimens of fluorescein may differ in their action or be contaminated.

Archiv für Verdauungs-Krankheiten, Berlin

August, XX, No. 4, pp. 423-542

58 *Melanosis in the Large Intestine. (Dickdarmmelanose.) F. Niklas.
59 *Gastric Ulcer and Cancer. (Ulcus rotundum et Carcinoma ventriculi.) A. D. Woloschin.
60 Familial Occurrence of Gastric Ulcer. (Familiäres Auftreten des Ulcus ventriculi.) V. Plitek.
61 *Pathology of the Appetite. (Hyperorexie, Anorexie und Parorexie.) W. Sternberg.
62 Duodenal Ulcer; Two Cases. J. de Groot.
63 *Various Types of Malnutrition in Adults. (Ueber Nährschäden Erwachsener.) C. Funck.
64 Gastric Ulcers in Bavaria. J. Kossinsky.

58. **Melanosis of the Large Intestine.**—Niklas adds two to the thirty cases on record of this peculiar pigmentation restricted to the lower bowel. In his two cases the mesocolic lymph-glands were also melanotic. His chemical study of these cases and of a case of Addison's disease suggests that an excessive production of oxidases is the explanation of the pigmentation.

59. **Gastric Ulcer and Cancer.**—Woloschin analyzes the experiences in the last seven years in his service at Cronstadt with 11 cases of ulceration in the stomach and 51 of malignant disease. He found large accumulations of colon bacilli over the ulcers in their early stages, and is convinced that they had something to do with the development of the lesion; they were not found elsewhere in the stomach, and the water at Cronstadt is contaminated with colon bacilli to an extreme degree. In none of the 11 cases had the correct diagnosis been made; appendicitis was the presumption. Among the 51 gastric cancer patients, 4 were between 20 and 30, and 6 between 30 and 40.

His necropsy findings confirm the assumption of a primary proliferation of connective tissue, the same cause inducing this and likewise atypical proliferation of the epithelium when the cause acts uninterruptedly and long on a certain point in the gastric mucosa. An infectious cause might do this and also explain the transformation of an ulcer into a cancer. The cancer in all his younger cases was an adenocarcinoma and it spread by extension, without metastases in neighboring organs, and thus this form offers the best prospects for operative intervention. In a number of instances of diffuse cancer of the stomach there were no morbid findings elsewhere except in adjoining lymph-glands. In his total cases there was metastasis in lymph-glands in 18; in the liver in 17; in the pancreas in 10; peritoneum in 4; appendix in 3; and in the adrenal, kidney, gall-bladder and rectum, in 1 each. Of the total 105 cancer cases during the seven years in question, 75 were in the stomach or esophagus and, with one exception, all were from the civilian population although the civilian patients numbered only 4,394 to the 7,007 soldier patients from the garrison. He accepts this as further evidence incriminating the much contaminated water in connection with the occurrence of gastric ulcer and cancer. In the garrison the drinking water is systematically sterilized.

61. **Pathology of the Appetite.**—A recent article by Sternberg along much the same lines as this was reviewed in THE JOURNAL recently, p. 1598.

63. **Chronic Disturbance in the Intermediate Metabolism in Adults.**—Funck refers to the chronic malnutrition in adults corresponding to what the Germans call in infants *Nährschäden*, which means literally "injury from the food." The

trouble is not in the chyme nor intestinal wall but beyond this, in the preparation of the albumin molecule for absorption. The improperly prepared molecule acts like a poison, setting up a kind of anaphylaxis, as he explains and describes in detail, with the tabulated metabolic findings in a number of typical cases. They showed a toxic relative lymphocytosis, increase in the specific precipitins, and a new precipitin appeared in the blood. The anaphylaxis condition may entail disturbance in carbohydrate metabolism and this disturbance may persist even after the primary cause, the malnutrition, has ceased to act. This all paves the way for diabetes and other metabolic diseases. The improperly prepared alien albumin may get into the blood from the food or from the pathologic product of some gland with an internal secretion—often as a response to the stimulus from food entering the bowel. Correction of one may have a favorable influence on the other. When diabetes is complicated with gastro-enteritis, the sugar output may often be reduced to normal merely by curing the stomach and bowel trouble. As the gastro-intestinal mucosa becomes less permeable for the alien albumin, and its normal functions are restored, the functioning of glands with an internal secretion, the pancreas in particular, improves with it.

Funck has often succeeded in restoring clinically normal conditions in the intermediate metabolism by modifying the diet, lavage of the stomach, supplying substitutes for lacking digestive ferments, and having the patient drink large amounts of a mineral water. But far beyond the effect of these measures is systematic flushing out of the bowel with a hypotonic solution through a duodenal sound. This clears out the bowel, draws out toxic secretions and washes them away, modifies the bacterial flora and its culture media in the intestines, while exerting a healing action on the mucosa and glands in the bowel. He uses three liters in from two to five hours, or keeps up the irrigation for sixty hours. In some cases of impending uremia he rinsed the bowel first with a hypotonic solution without chlorids and followed this with an isotonic diuretic solution, keeping up this enteral drainage for six hours. The blood-pressure subsided to 35 mm. and profuse diuresis followed. Similar prompt and far-reaching benefit was realized in delayed reabsorption of effusion and transudates, in anemia, in "presclerosis," and to promote the elimination of the products of acute infection. In a case of "asystolic toxemia" the pulse was reduced by this enteral drainage from 112 to 84, the respiration rate from 26 to 18, while the output of urine increased from 950 to 1,750 c.c. in thirty-six hours.

The clinical manifestations of this form of chronic malnutrition may include dyspepsia in its broadest sense, pruritus, eczema, neurasthenia or neuralgia, constipation generally of the spastic type, diarrhea with all the signs of an enteritis, subjaundiced, greyish tint, depression, migraine or hypertony. Examination of the stools throws no light on the absorption of toxins but there may be anacidity and defective pancreas function and motor insufficiency of the stomach.

Berliner klinische Wochenschrift

September 28, LI, No. 39, pp. 1657-1676

65 Effect of Manual Artificial Respiration. (Zur Frage nach dem Effekt der manuellen künstlichen Atmung beim Menschen.) A. Loewy.

66 Treatment of Colitis by Irrigation through the Appendix. (Behandlung der Colitis gravis mittels Spülungen von der Appendicostomie aus.) E. Fuld.

67 Care of the Wounded in the Home Zone. (Der Kriegssanitätsdienst in Berlin.) H. W. Brettner.

68 Surgery of Vessels. (Gegenwärtiger Stand der Blutgefässchirurgie.) E. Jeger. Commenced in No. 38.

Correspondenz-Blatt für Schweizer Aerzte, Basel

September 5, XLIV, No. 36, pp. 1121-1152

69 *Skin Reaction in Differentiation of Small-Pox and Chicken-Pox. (Differentialdiagnose von Variola und Varizellen mit Hilfe der kutanen Allergie.) Tièche.

September 12, No. 37, pp. 1153-1184

70 *Improved Technic for Formaldehyd Sterilization. (Neues apparatloses Formaldehyd-Verdampfungs-Verfahren.) A. Hauswirth.

71 *Diagnosis of Gastric and Duodenal Ulcer. F. de Quervain. Commenced in No. 35.

September 9, No. 38, pp. 1185-1216

72 Examination in Cases of Paralysis of Ocular Muscles. (Zur Analyse der Doppelbilder.) J. Strebel.

September 26, No. 39, pp. 1217-1248

73 Cutaneous Manifestations of Tuberculosis in Children. (Die kleinpapulösen Haut-Tuberkulide beim Kinde.) E. Peer.

69. **Differential Skin Reaction in Variola and Varicella.**—Tièche applies a test technic, similar to that of Pirquet's tuberculin skin reaction, as a means for rapid differentiation of small-pox from varicella and other eruptive diseases. His eighteen months of experience have confirmed, he says, the harmlessness and reliability of the simple measure. Kling's experience with protective vaccination against varicella when an epidemic broke out in an institution with 200 children, also confirmed incidentally the value of the test, as he mentions casually that no local reaction was observed until the eighth day at the point inoculated with the varicella lymph. Vaccine lymph, on the other hand, always induces a prompt local reaction and, generally in four hours at longest. Tièche experimented on himself until he had conclusively demonstrated that no local reaction was evident for several days, if at all, after he had vaccinated himself in the arm with the secretion or rubbed-up contents of a varicella pimple. On the other hand, the secretion or scrap of contents from a small-pox pustule promptly induced a typical early reaction in the skin at the point of inoculation. In his first communication on the subject he reported constantly negative results in 18 varicella cases and constantly positive in 9 variola cases. He here brings his report down to date with 7 new cases suspected to be small-pox. The reaction was positive in 5 and the course of the cases confirmed the assumption of variola, while the negative reaction in the other cases likewise was proved correct by the further course. The test inoculations were made on three healthy adults, himself, his wife and sister-in-law.

To render the secretions harmless, he heated the lymph to 60 or 70 C. for five minutes before applying it to the three minute scratches on the arm, or treated it with carbon dioxid snow or with ether, or all three. If a harmless substance, like a tuberculin, could be prepared to use this would be better, but too much time would be lost. He obtained a positive early reaction with the variola lymph after keeping it for eleven months in one case. A few cases are described in which everything seemed to indicate small-pox but this negative local reaction, and on this he based his diagnosis and allowed the patient to stay at his hotel, thus saving all concerned great annoyance and trouble, and the course of the case confirmed that it was not small-pox, but either varicella or an atypical erythema multiforme. Public health officials might test themselves with varicella secretions to learn whether they are especially sensitive to it. If not, they can feel confident that they will be able to differentiate variola in its earliest stages by the above technic. He gives an illustration of the typical positive and negative findings. (Kling's articles were summarized in THE JOURNAL, Dec. 20 and 27, 1913, pp. 2277 and 2326.)

70. **Simplified Technic for Formaldehyd Sterilization.**—Hauswirth describes a technic which is proving constantly very effectual. Several chemical reactions are involved, with generation of large amounts of steam, which supplies the needed moisture, and the process starts at once with extreme violence, so that the effect is realized even if the room is not quite hermetically sealed. There is no danger of fire, he says, while the ingredients are comparatively cheap, and no special skill is required. The ingredients can be put up in two packages for the layman to mix. He reviews the chemical principles involved; the generation of heat is an important factor and the tin tub or wooden tub used must not be too thick-walled or it would absorb too much heat. The substances used are molecular amounts of potassium chlorate and metallic iron in fine powder and calcium carbonate in an amount corresponding to the size of the room. These are all mixed well together. Then formaldehyd is added in the proportion of 20 c.c. to the cubic meter of space. The reac-

tion occurs when to this mixture sulphuric acid is added in an amount to correspond to the molecular relations of the $KClO_3$ and Fe. He mixes the 98 per cent. sulphuric acid with kieselguhr (diatomaceous earth) and dilutes with 20 c.c. water to the cubic meter of space. When these two mixtures are poured together the steam and fumes rise in such clouds that even two liters of fluid soon evaporate and leave the vessel dry.

[The potassium chlorate should be in finely powdered form and be mixed with the iron and chalk without friction, as otherwise there might be danger of an explosion.—ED.]

71. **Gastric and Duodenal Ulcer.**—De Quervain's article was prepared for the meeting of the International Surgical Association at New York last April.

Deutsche medizinische Wochenschrift, Berlin

September 24, XL, No. 39, pp. 1777-1800

74 *Psychiatry and War. K. Bonhoeffer.
75 *Injuries of the Eyes in the Field. (Kriegsophthalmologische und organisatorische Erfahrungen.) T. Axenfeld.
76 Cremation in Wartime. (Zur Feuerbestattung im Kriege.) J. A. Grober.
77 Vaccine Therapy of Gonorrhea. (Die Vakzinebehandlung der Gonorrhoe und gonorrhoischer Komplikationen.) O. Boeters.
78 Care of the Wounded in the Field. (Organisation des Sanitätsdienstes im Kriege.) Schuster.

74. **Nervous and Mental Disease in the Field.**—Bonhoeffer reiterates that the protection of the other troops is the first thing to be thought of when mental disease develops in a soldier at the front, and as the tranquil surroundings so necessary in treatment of nervous and mental disease can be obtained only in the home zone, the patient should be hurried thither as fast as possible. To facilitate transportation and the protection of the troops against imitation psychoses, he suggests that nothing seems to act better than 0.0005 to 0.001 gm. scopolamin with 0.01 or 0.02 gm. morphin. Morphin alone is inadequate. He states that during the mobilization in Germany a number of cases of delirium developed, all without physical complications. The emotional stress of starting for the war, the fatigue of long journeys and the deprivation of alcohol were responsible for the delirium in persons in the corresponding stage of chronic intoxication.

75. **Injuries of the Eyes in the Field.**—Axenfeld has already had extensive experience in this line as his town, Freiburg, has received large numbers of wounded direct from the battle-fields in Lothringen. He emphasizes the necessity for caring for the injured eye from the first instead of deferring this until later as too often happens when the wounds are extensive elsewhere, and the eye is left in such a condition as to invite sympathetic ophthalmia. He asserts that insidious inflammatory changes developing in the wounded eye are the most liable to entail sympathetic mischief; when the inflammation develops with a stormy onset the other eye is far more liable to escape. If the eye has been perforated by a projectile cautious exenteration should be done, scraping out with the curet every scrap of tissue, particularly of the uvea, after removing the cornea. When the exenteration is complete the conjunctiva should be drawn together with a few loose stitches if possible. Circumscribed wounds and ruptures affecting only the front part of the eye may heal with retention of some vision, even if the interior of the eye has been flooded with blood; it may be absorbed in time if the wound heals over without inflammation. The best method to obtain this is to draw down the mobilized conjunctiva according to Kuhnt's technic. In one of his cases this was done at once and the ruptured margin of the cornea healed under this plastic shield without a trace of infection and vision is improving every day. The main point is to have such wounds of the eyes fall early into the hands of one skilled in operative ophthalmology. The humors of the eye afford unusually good culture media for germs; pneumococcus sepsis developed in some cases incredibly fast after a shrapnel injury of the eyeball. Roentgenoscopy may fail to reveal metal scraps which yet can be drawn out with the magnet. Axenfeld has impressed on the army surgeons at the front the extreme importance of sending men whose eyes have been injured to the nearest ophthalmologist, and has insisted on such being available near the front.

Jahrbuch für Kinderheilkunde, Berlin

August, XXX, No. 2, pp. 133-262

79 *Curability of Tuberculous Meningitis. (Heilungsmöglichkeit der Meningitis tuberculosa.) J. v. Bokay.
80 Composition of Body in Malnutrition. (Zur Kenntnis der Körperzusammensetzung bei Ernährungsstörungen.) E. Klose.
81 Pneumococcus Meningitis. (Ueber Pneumokokkenmeningitis und ihre Behandlung mit Optochin.) S. Wolff and W. Lehmann.
82 *More Individualization in Infant Feeding in Hospitals. (Eine weniger schematische Behandlung von Säuglingen im Krankenhause.) K. Stolte.

September, No. 3, pp. 263-372.

83 The Problem of Contagiousness. F. v. Szontagh.
84 Supernumerary Bone in Infants' Skull. (Grosser Fontanellknochen der vorderen Fontanelle bei einem Säugling.) M. Soldin.
85 Leukemia in Infants. (Die Leukämie der Säuglinge.) E. Adler.
86 *Intravenous Antitoxin in Diphtheria. K. Alber.
87 Persisting Aortic Stem and Ductus Arteriosus in Infant Living for Six Months. (Fall von persistierendem Truncus arteriosus communis.) Z. von Bokay.

79. **Curability of Tuberculous Meningitis.**—A diagnosis of tuberculous meningitis has commonly been regarded as equivalent to a death sentence. Bokay gives tables of 34 cases of recovery in this disease, reported in the literature, and details of three cases of his own. There were no recoveries in children under 2 years of age; the proportion of recoveries increased in children from 5 years up, though only 10 per cent. of the cases occur in children over 7. The recoveries generally occurred in cases in which the tuberculosis was limited to the meninges and did not involve other organs, and in which there is no marked tubercle formation. Aside from hyperemia, the only method of treatment that contributes to recovery is the surgical, consisting in trephining and drainage. In the cases in which recovery has followed Quincke's lumbar puncture, he thinks that the recovery is due as much to the natural resistance of the body as to the treatment.

82. **More Individualization in Care of Infants in Hospitals.**—The results in hospitals for infants and children have been better of recent years with the development of greater knowledge of the principles of nutrition. The fact remains, however, that the majority of children do not thrive as well in a hospital as in the home. This question of "hospitalism" has been much discussed. Stolte holds that with proper management children may be made to thrive as well in hospitals as in the home. To accomplish this result it is necessary to individualize more in the child's treatment. There are many factors that enter into his well-being besides those of just the right kind and amount of nourishment. Rules should not be followed blindly. The nurses should be given considerable latitude in their treatment of the child, and nurses of sufficient intelligence and interest selected so that they will, to a certain extent, supply the place of a mother's care. The child has psychologic, as well as physical needs, and personal attention and tenderness are important factors. In his service, the mothers themselves are allowed to be with the children as much as possible. Adults require different amounts of food at different times and under different bodily conditions. Why not infants? So the amount of food is adjusted, within certain limits, to the child's desires. If he is manifestly hungry a quarter or a half hour before feeding time he is fed. Nurses are taught to watch each individual child and treat it as a human being with emotions and desires, not merely as a "case" in which certain rules are to be followed in a routine fashion. Often a child can be made to assimilate its nourishment satisfactorily only after the nurse has carried it about, played with it or sung to it. Naturally this does not mean that there is any relaxation of care in regard to scientific feeding, avoidance of infection, etc., but rather the contrary. Medicinal treatment is avoided in alimentary disturbances as far as possible. Five case histories are given illustrating the method and its success.

86. **Intravenous Injection of Antitoxin in Diphtheria.**—There was an extraordinarily severe epidemic of diphtheria in Bremen in the winter in 1913. Because of the unusual severity of the disease, Alber adopted the intravenous method

of giving the antitoxin. He gives histories of forty-three cases and temperature curves from a number of them. The results with reference to mortality, disappearance of membrane, effect on stenosis, fever, pulse and paralysis were very satisfactory. From his clinical experience he comes to the conclusion that the intravenous method is quicker and more reliable in its action than the intramuscular. Not more than 5,000 units can be given intravenously in children, 8,000 in adults, but as the effect is 500 times as great as when given intramuscularly (at least this has been shown to be true in animals), the dosage is for practical purposes greater than by the latter method. Serum sickness and anaphylaxis have been feared in giving intravenously, but in fifty cases Alber only had one case of serum sickness that was severe enough to influence the patient's general condition.

Medizinische Klinik, Berlin

September 27, X, No. 39, pp. 1503-1526

88 *Psychiatry in the Field. (Versorgung der Neurosen und Psychosen im Felde.) W. Weygandt.
89 Surgery in the Field. A. Köhler. Continued.
90 *Surgery in the Home Zone. E. Heymann. Continued.
91 *Chronic Articular Rheumatism with Enlarged Glands and Spleen. (Chronischer Gelenkrheumatismus; Typus Still-Chauffard.) H. Pollitzer.
92 *Prophylaxis of Epidemics. (Allgemeine Gesichtspunkte der Seuchenbekämpfung.) F. Neufeld.

88. **Nervous and Mental Affections in the Field.**—Weygandt says that contrary to the practice under other conditions, the aim should be to hurry the patient away at once, stupefy him with a narcotic if necessary, and also use force if unavoidable; even a strait-jacket may be needed. The main thing is to get him out of the battle-field environment at the earliest possible moment and the less he remembers of the journey the better. There is no special war psychosis, but war is very liable to fan into a flame a latent predisposition to epilepsy, hysteria, slight imbecility and manic-depressive or catatonic attacks, or a syphilitic brain or spinal-cord trouble. Prompt removal of those affected is important not only for their own welfare but even more on account of the effect on other soldiers. A kind of "mass psychosis" is liable to develop in a time of panic, such as occurred at Kirkilisse and Lule Burgas in recent years. He cites figures showing that psychoses developed in 0.54 per thousand of the German troops during the Franco-Prussian war; in 2.7 per thousand of the United States troops in the Cuban war; in 2.6 per thousand in the British during the Boer war, and in 2 per thousand in the Russian troops during the war with Japan, while the records show only 0.33 per thousand among the Bulgarian troops in the late Balkan campaigns, 0.25 in the Montenegro troops and also in the Servian troops, and 0.097 per thousand among the Grecian troops. He ascribes the difference between the Russian and the Balkan figures to the liquor-drinking among the Russians. He does not offer any explanation, however, for the large numbers among the German expedition corps in southwest Africa, 4.95 per thousand; including cases of epilepsy and hysteria, 8.28 per thousand of the troops were thus affected.

Heat stroke and concussion of the brain require complete rest on the spot; the former may need venesection, cold applications, revulsion, inhalation of oxygen, saline infusion, lumbar puncture, atropin, quinin, ergot, or epinephrin. Massage of the heart might also be considered in case of complete collapse. Rest and analeptics are likewise the best measures for treatment of concussion or commotion of the brain; this may occur merely from the impact of the air from a passing bomb. Unconsciousness with severe shock may be induced by the air alone, as the shell passes, and such severe shock with incontinence generally proves fatal. When there is shock with vasomotor paralysis the head should be placed low and autotransfusion done by tying off the legs and abdomen, applying heat at the same time. He emphasizes the extreme importance for keeping an outlook for symptoms indicating an impending psychosis or serious nervous or mental disease.

90. **The Wounded in the Home Zone.**—Heymann states that the condition in which the wounded reached Berlin has abundantly confirmed the efficiency of the first-aid packages. The wounds were found almost without exception in excellent condition. Even jagged shrapnel wounds healed rapidly. Bullet or stab wounds that bleed wash out any germs in them and the wound heals promptly under the dry clot of blood as was attested by hundreds of cases. Heymann refrains from disturbing even the clotted blood around the wound and scraps of cloth sticking in the clots. They are dangerous only when they are loosely embedded in the clot or the wound continues to secrete. Large scraps of cloth, hairs, slivers of wood or scraps of metal should be removed with tweezers but splinters of bone had better be left unmolested. Although a wound may look very jagged and destructive yet in the depths the various tissues have generally retained their connection with each other and healing may proceed without material disfigurement if their arrangement in the depths is not disturbed. Roentgenoscopy frequently shows the orderly arrangement in respect to each other of what seemed to be a mass of iregular splinters of bone. None of the wounds he has had occasion to treat had been sterilized with iodin, and yet all healed as well as if it had been applied. Some of the wounded had been in the trenches for twenty hours without a chance to apply even their first-aid dressing.

91. **Chronic Articular Rheumatism with Enlargement of Lymph-Glands and Spleen.**—Pollitzer reports two cases of this form of severe chronic articular rheumatism in which there are occasional attacks of fever with enlargement of lymph-glands and of the spleen. The mother of one patient had had recurring articular rheumatism and endocarditis; the mother of the other was tuberculous. Both patients were girls in the twenties with a history of recurring tonsillitis but neither responded to the usual mild tuberculin test. Ordinary articular rheumatism does not affect the lymph-glands, but in these cases the lymph-glands behaved as in tuberculosis, and roentgenoscopy revealed minute areas of destruction in some of the bones, suggesting a tuberculous ostitis. In a third more recent case there was unmistakable evidence of tuberculous ostitis and a history of recurring rheumatoid affections with enlargement of lymph-glands, but the process throughout was of such a torpid nature that it never progressed to the cheesy stage.

The cases suggest Poncet's tuberculous rheumatism but Poncet never mentioned enlargement of glands in his descriptions. The syndrome is like that described by Still and Chauffard, but these deny all connection with tuberculosis.

92. **Prophylaxis of Epidemics.**—This long article is taken from a pocket manual of epidemiology just off the press.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

October, XL, No. 4, pp. 443-536. Last indexed Aug. 8, p. 517

93 *Artificial Termination of Pregnancy and Sterilization at One Operation. (Unterbrechung der Schwangerschaft und Sterilization auf abdominellem Wege in einer Sitzung.) E. Anderes.
94 Tuberculosis of Genital Apparatus in Little Girls. G. Graefe. Concluded in No. 5.
95 *Pathogenesis of Eclampsia. O. Vertes.
96 *Treatment of Tumors with Tumor Extracts. G. Schubert.

93. **Artificial Termination of Pregnancy and Sterilization at One Operation.**—In cases in which abortion is absolutely indicated, as in advanced tuberculosis, severe heart disease with failure of compensation, and severe chronic kidney disease, sterilization should be performed at the same time, for it is useless to subject the woman to the dangers of repeated pregnancy and abortion, and there is no hope of the condition improving so that a later pregnancy could be allowed to continue. Anderes formerly terminated the pregnancy by the vaginal route and then sterilized through the abdomen, but he has found that asepsis is more easily preserved by performing both operations at the same time abdominally. The uterus is opened, the contents removed, and it is thoroughly curetted through the incision. Then about 3 cm. of each tube is resected at the uterine end. This is preferable to complete excision of the tube, because it is not necessary to ligate any of the large vessels, and consequently there is less danger of thrombosis. Excessive hemorrhage from the uterus is avoided by previous injection of ergot. There has

been less hemorrhage with this method than with vaginal abortion. He has operated in fifteen cases in this way with good results.

95. **Pathogenesis of Eclampsia.**—Vertes performed a series of experiments which show that animals can be sensitized by their own albumin, as well as by foreign albumin. The symptoms of this hypersensitiveness are practically identical with those of eclampsia, and moreover the organs of the animals showed the same changes post mortem as are found in the organs of patients who have died of eclampsia. He therefore believes that eclampsia is a manifestation of anaphylactic shock. This anaphylaxis is produced by the absorption of chorionic villi, which Schmorl has shown takes place during pregnancy. The albuminuria of pregnancy is not a simple mechanical functional disturbance of kidney function, nor yet a chemical one caused by the products of fetal metabolism, but it is a premonitory stage of eclampsia, which is identical with it in etiology, and is only a more advanced stage of the same condition.

96. **Treatment of Tumors with Tumor Extracts.**—Schubert describes 8 cases that he has treated by Lunckenbein's autolysate method. (See THE JOURNAL, Feb. 14, 1914, p. 580. See also p. 2000.) While the results were not brilliant, most of the cases were in such an advanced stage that little could have been expected of any method of treatment. In one case of sarcoma of the tonsil there was marked improvement, but the patient refused further treatment on account of the slight pain of the injection. In a case of cancer of the breast the enlarged glands in axilla and neck underwent marked regression. It would seem, therefore, that this treatment offers hope of further development. It offers the advantage over radiotherapy that it is constitutional in its effect, while the latter is purely local. There was never implantation metastasis at the site of injection. He discusses the question of whether the reddening at the site of injection can be regarded as a positive tumor reaction and be used for purposes of diagnosis. Abderhalden has succeeded in making rat sarcomas disappear by injecting extracts of them into dogs and then injecting the serum from the dogs into the sarcomatous rats. He is now undertaking experiments of the same sort in human beings with serum obtained from horses after the injection of extract of human cancers.

Münchener medizinische Wochenschrift

September 29, LXI, No. 39, pp. 1993-2024

97 *Simplification of Examination with Duodenal Tube. (Klinische Duodenalschlauchuntersuchung.) G. Holzknecht and Lippman.
98 *The Meiostagmin Reaction. (Untersuchungen mit der Meiostagminreaktion—Ascoli und Izar.) N. Blumenthal and E. Fränkel.
99 Leukocyte Inclusions in Scarlet Fever. (Bedeutung der von Doehle beschriebenen Leukozyteneinschlüsse für die Scharlachdiagnose.) R. Isenschmid and W. Schemensky.
100 Digestion of Lymph-Gland Substance Not Specific in Dialysis Serodiagnosis. (Zur Bewertung des Thymus- und Lymphdrüsenabbaus bei Abderhaldens Dialysierverfahren.) H. Beumer.
101 *Serodiagnosis by Protective Ferments in Tuberculosis. W. Ammenhäuser.
102 Injuries of the Eyes. (Ueber Augenverletzungen.) Heine.
103 Beware of Wasting Imported Drugs. (Sparsam mit Uebersee-drogen!) W. Straub.
104 Prophylaxis of Epidemic Diseases. (Zur Seuchenprophylaxe.) F. Rosenthal.
105 Advantages of Varnish Applied to Immobilize Germs. (Behandlung des Operationsfeldes durch Firnisse.) Linkenheld.
106 List of Foreign Proprietaries and their German Equivalents.

97. **Improved Technic for Examination with the Duodenal Tube.**—Roentgenoscopy has shown that the duodenal tube is passed along in the esophagus by peristalsis, but in the stomach it moves forward more under the action of gravity; muscular movements pass it through the pylorus, and after this it moves forward by gravity. Holzknecht and Lippman describe how they utilize these various factors to facilitate the introduction of the tube into the duodenum, having the patient change his position, bend forward, recline on the right side with the pelvis raised, etc., in turn, and state that by this means the tube can be safely in place in the duodenum in from seventeen to twenty-five minutes.

98. **The Meiostagmin Reaction.**—Blumenthal and Fränkel report that the meiostagmin reaction was positive in all but one of 31 pregnant women examined, some in the earliest stages of the pregnancy, while it was constantly negative in 20 normal controls. With cancer of the gastro-intestinal tract, positive reactions were obtained in 92.5 per cent. of 40 cases. The superficial cancers and those of the female genitals seldom gave a positive reaction, but it was positive with mammary cancer in 87 per cent.

101. **Protective Ferments in Diagnosis of Pulmonary Tuberculosis.**—This article describes the application of Abderhalden's dialysis technic to the differential diagnosis of pulmonary and glandular tuberculosis in sixty cases. The results demonstrate that the albumin in the sputum is in part albumin from tubercle bacilli. Also that the blood in pulmonary tuberculosis contains specific ferments which digest lung tissue and tubercle bacilli albumin. In advanced stages these ferments vanish from the blood. In non-tuberculous catarrhal lung affections only lung tissue is digested, not tubercle bacilli albumin. With tuberculous glandular disease, gland tissue was always regularly digested. No specific ferments of the kind were ever found in the blood of the healthy. Ammenhäuser draws attention to these conclusions from his research as indicating that the Abderhalden technic may render valuable service in the early diagnosis of tuberculosis.

Wiener klinische Wochenschrift

August 27, XXVII, No. 35, pp. 1243-1258

107 Influence of Radiotherapy on Production of Protective Ferments. (Einfluss der Strahlenbehandlung auf die sogen. Abderhaldenschen Abwehrfermente.) H. Keitler and K. Lindner.

September 3, No. 36, pp. 1259-1274

108 Diagnosis of Concomitant Gastric and Duodenal Ulcers. T. Barsony.
109 Specialist Work for the Troops. (Vorschläge zur Organisation der spezialärztlichen Dienstleistung in Kriegszeiten.) M. Kahane.

September 10, No. 37, pp. 1275-1290

110 Injuries from Freezing. (Zur Klinik der Erfrierung.) J. Csillag.

September 17, No. 38, pp. 1291-1306

111 Tuberculosis and its Treatment. S. Federn.
112 History of the Organization in Various Countries of Volunteer Assistance for the Wounded and Sick. (Entwicklung der freiwilligen Krankenpflege.) E. Wiener. Commenced in No. 34.

September 24, No. 39, pp. 1307-1322

113 Prophylaxis of Epidemic Disease during the Mecca Pilgrimages. (Krankenbewegung am Infektionshospital der internat. Quarantänestation in Tor.) E. Wiener.

October 1, No. 40, pp. 1323-1342

114 Modern Surgery in the Field. (Einige allgem. Bemerkungen zur modernen Kriegschirurgie.) A. Fraenkel. Commenced in No. 39.
115 Convalescent Homes for Soldiers. (Soldaten-Genesungsheime.) J. Urbach.

Zentralblatt für Chirurgie, Leipsic

September 26, XLI, No. 39, pp. 1513-1536

116 *Diversion of Lymph from Scrotum. (Die Lymphableitung des Skrotum.) E. Kondoleon.
117 Technic for Treatment of Cleft Palate. (Zur Technik der Uranoplastik.) J. Schoemaker.

116. **Treatment of Edema of the Scrotum.**—Kondoleon writes from Athens to extol the benefit from diversion of the lymph from the scrotum by excising the deep fascia and turning over the tunica vaginalis. In the case reported he excised the fascia, cutting out a piece the length of the lengthwise incision and two fingerbreadths wide. Then he incised the vaginalis and turned it over outward as in an operation for hydrocele and then sutured the skin without draining. This was done on both sides. The procedure is recommended for all cases of elephantiasis of the scrotum in its first stage, when there is merely stagnation of lymph without much sclerosis of connective tissue.

Zentralblatt für Gynäkologie, Leipsic

September 26, XXXVIII, No. 39, pp. 1265-1280

118 *Removal of Uterus Instead of Cesarean Section in Infected Cases. (Die totale Gebärmutterabtragung als Ersatz für den Kaiserschnitt.) S. Recasens.

118. **Hysterectomy in Place of Cesarean Section.**—Recasens declares that to wait a few hours until the fetus has died

before removing it, in case of impossibility of delivery by the natural route, is just as much an intentional killing of the child as if craniotomy had been done at once. In cases of contracted pelvis with infection already installed and living child, he has often done extraperitoneal cesarean section, but the final outcome was frequently disastrous for mother or child or both. His disappointing results in this class of cases led him to treat later cases by abdominal hysterectomy. This spared the pelvis all danger of contamination from infected fluids, and the operation can be done so quickly that the child is promptly delivered alive. In one case the woman was seven months pregnant and had a very large cancer of the cervix. As soon as the uterus was taken out it was carried into another room by the assistant and a living child extracted from it. In a recent case a woman with contracted pelvis had been in labor for two days; the temperature was 39 and 39.5 C.; pulse 120, and the secretions smelt bad. One of her two previous pregnancies had required craniotomy; the other had terminated in a miscarriage at seven months. Recasens decided at once to remove the unopened uterus. The vagina was painted with strong tincture of iodin. As soon as the abdomen was opened the ligaments and arteries of the uterus were clamped before the vagina was entered. A normal male child weighing 3,100 gm. was taken from the uterus, which had been hurried into the next room. He insists that this method should be adopted as the routine procedure when the temperature is high. In cases merely supected of infection, extra-peritoneal cesarean section may render service.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 27, XXXV, No. 112, pp. 1217-1232

119 *Rapid Post-Typhoid Cholelithiasis. P. Ballarin.

119. **Rapid Development of Gall-Stones after Typhoid.**—Ballarin's patient was a girl of 16 who had typhoid with the six other previously healthy members of the family. The temperature did not return quite to normal for a month after the main typhoid symptoms had subsided. During this convalescent period she had several attacks of gall-stone colic and passed two concrements. Typhoid bacilli were cultivated from the center of each, but none was found in the stools during or after convalescence. The gall-stones were of pure cholesterin, pigmented in the center.

Pediatria, Naples

September, XXII, No. 9, pp. 641-720

120 *Stimulation of Gaseous Metabolism during Treatment with Direct Sunlight. (Modificazioni del ricambio respiratorio sotto l'influenza dell'elioterapia.) G. di Cristina.

121 *Purulent Disease of the Urinary Passages in Young Children. (Sulle affezioni purulente delle vie urinarie nell'infanzia.) S. Cannata and G. Caronia. Concluded.

122 Blood-Findings in Kala Azar in Children. (Contributo alla ricerca del parassita di Leishman nel sangue periferico di bambini affetti da Leishmaniosi.) R. Vaglio.

120. **Stimulation of Gaseous Interchanges during Heliotherapy.**—Di Cristina tabulates the findings in regard to the gaseous interchanges in three children during periods of three weeks or more before and during systematic exposures to the direct sunlight in treatment of tuberculous lymph-glands or hypothyroidism. The findings testify to marked stimulation of the oxidative processes and the metabolism in general. The vital processes proceed more vigorously, especially assimilation of the food. The respiratory quotient had averaged 0.927 and 0.792 in the two tuberculous cases but after two weeks of heliotherapy it averaged 1.143 and 1.0632.

121. **Purulent Infections of the Urinary Tract in Infants.**—Cannata and Caronia conclude their long study of this subject by emphasizing the necessity for warding off infection of the urinary tract as it is liable to prove a very serious matter, especially in young infants and all children with an inherited taint. Phimosis and foreign bodies in the bladder should receive special attention in prophylaxis, and every effort should be made to avoid trauma of the bladder, chilling, habitual constipation (in which there is usually elimination of germs by way of the urinary apparatus), and inadequate intake of fluids. Care should be taken to prevent soiling the parts with feces, and during the course of any casual infection the urine should be frequently examined and the child compelled to drink often and freely to prevent clogging of germs in the kidneys and bladder. In diseases known to affect the kidneys, it might be advisable to give small preventive doses of hexamethylenamin in addition to large amounts of fluid. When a cystitis or pyelocystitis is diagnosed, strict bed rest should be enforced and the food be entirely fluid. Even nursing infants should be made to drink copiously. If an infant refuses to drink freely, the water should be poured into the stomach through a tube or injected into the rectum. The diet should be as nourishing as possible; nothing is worse than to let the child's strength run down from lack of adequate nourishment.

They have found hexamethylenamin very useful. Hematuria followed its use in one of the cases; the child was subject to epistaxis and the hematuria promptly subsided on suspension of the drug. In the few cases on record in which hematuria was noticed under this drug, there was evidently a tendency to hemophilia. Salol or salicylic acid may be alternated with it. The doses recommended are from 0.8 to 1.5 gm. hexamethylenamin and 0.5 to 1.5 gm. salol in the twenty-four hours for an infant; older children can take up to 2.5 gm. of each. To favor the disinfectant action of the former, large amounts of an acid drink (hydrochloric or phosphoric acid), extremely diluted, are given with the hexamethylenamin. Local treatment of the cystitis is seldom required. In rebellious cases, serotherapy or vaccine therapy may prove useful. Great improvement was realized with the latter in a case of pyelocystitis from colon bacilli and Fränkel's diplococcus. Anorexia may be combated with five or ten drops of fluid extract of condurango twice a day before meals; or the child may have to be fed through a stomach tube or given nutrient enemas. Scraps of ice in the mouth may arrest vomiting; if not, a teaspoonful of a 2 per cent. solution of sodium citrate as needed.

Policlinico, Rome

August, XXI, Medical Section, No. 8, pp. 341-388

123 *Cholesterin in the Blood and Resisting Power of the Red Corpuscles in Anemic Conditions. G. Antonelli.

124 Lipemia, Especially in Diabetes Mellitus. P. Bosco. Commenced in No. 7.

September, No. 9, pp. 389-436

125 *Epinephrin in the Blood and Its Influence on the Cholesterin and Urea Content of the Blood and Cerebrospinal Fluid in Sick and Healthy Children. L. M. Spolverini.

126 Influence of Splenectomy on Experimental Pneumococcus Infection. U. Comelli.

127 *The Hygienic and Epidemiologic Importance of the Gases of Putrefaction. V. Puntoni. Commenced in No. 8.

123. **Cholesterinemia.**—Antonelli tabulates the blood findings in ten cases of anemia from various causes. The cholesterin content of the blood serum ranged from 0.21 per thousand to 1.56, the hemoglobin from 18 to 80 per cent. There does not seem to be any connection between the cholesterin content and the degree of the anemia nor with the greater or less resisting power of the red corpuscles.

125. **Epinephrin in the Blood of Children.**—Spolverini has been investigating the epinephrin content of the blood in various acute infectious diseases in thirty children, with constantly and totally negative findings. Epinephrin was administered to a number of healthy children by the mouth or subcutaneously, and in consequence the proportion of cholesterin in the blood materially increased while that of urea in the cerebrospinal fluid became much reduced. The influence of the epinephrin on the children was manifested in a slowing of the pulse and higher blood-pressure.

127. **Pathogenic Influence of Gases of Putrefaction.**—Laboratory animals forced to inhale gases from putrid matters died in time and severe changes were found in the vital organs, and the virulence of the bacteria in the intestines seemed to be immeasurably enhanced. Puntoni concludes that the gases of putrefaction evidently predispose to intestinal infection, both by rendering the germs more virulent and by injuring the bowel walls.